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Monthly Message

This month and next I am quoting paragraphs from significant addresses of two of our most famous Presidents. Although written many years ago, they are as pertinent today as they were when written. In this number, I invite your attention particularly to the second of two paragraphs from Washington's Farewell Address. These words of advice should afford much deep thought on the part of all of us today.

The Unity of Government which constitutes you one people is also now dear to you. It is justly so; for it is a main Pillar in the Edifice of your real independence, the support of your tranquillity at home; your peace abroad; of your safety; of your prosperity; of that very Liberty which you so highly prize. But as it is easy to foresee, that from different causes and from different quarters, much pains will be taken, many artifices employed, to weaken in your minds the conviction of this truth; as this is the point in your political fortress against which the batteries of internal and external enemies will be most constantly and actively (though often covertly and insidiously) directed, it is of infinite moment that you should properly estimate the immense value of your national Union to your collective and individual happiness; that you should cherish a cordial, habitual and immovable attachment to it; accustoming yourselves to think and speak of it as of the Palladium of your political safety and prosperity; watching for its preservation with jealous anxiety; discountenancing whatever may suggest even a suspicion that it can in any event be abandoned, and indignantly frowning upon the first dawning of every attempt to alienate any portion of our Country from the rest, or to enfeeble the sacred ties which now link together the various parts.

* * *

In the execution of such a plan nothing is more essential than that permanent, inveterate antipathies against particular Nations and passionate attachments for others should be excluded; and that in place of them just and amicable feelings towards all should be cultivated. The Nation, which indulges towards another an habitual hatred, or an habitual fondness, is in some degree a slave. It is a slave to its animosity or to its affection, either of which is sufficient to lead it astray from its duty and its interest. Antipathy in one Nation against another, disposes each more readily to offer insult and injury, to lay hold of slight causes of umbrage, and to be haughty and intractable, when accidental or trifling occasions of dispute occur. . . .

Frank B. Berry

FRANK B. BERRY, M. D.
Assistant Secretary of Defense
(Health and Medical)

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Foreword

The *United States Armed Forces Medical Journal* is the medium for disseminating information of administrative and professional interest to all medical personnel of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surgeons General of the several services invite all medical officers, dental officers, Medical Service Corps officers, Nurse Corps officers, and officers of the Veterinary Corps of the Armed Forces, and the medical consultants of the Army, Navy, and Air Force to submit manuscripts for publication in this *Journal.*

FRANK B. BERRY, M. D.,
Assistant Secretary of Defense (Health and Medical).

MAJOR GENERAL SILAS B. HAYS,
Surgeon General, United States Army.

REAR ADMIRAL BARTHOLOMEW W. HOGAN,
Surgeon General, United States Navy.

MAJOR GENERAL DAN C. OGLE,
Surgeon General, United States Air Force.

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THE SAFE-DRIVER INVENTORY

A Test for Selecting the Safe Automobile Driver

FREDERICK L. McGUIRE, *Lieutenant, MSC, USN*

THE SAFE-DRIVER Inventory (see Form A in Appendix) is a pencil and paper test designed for use in selecting the safe automobile driver. It is composed of 89 items and may be administered to groups or individuals.

SELECTION OF TEST ITEMS

In order to find valid test items, a number of existing test and original items were used.[1] The 446 people tested received a maximum of seven hours' psychometric testing as well as a personal interview. Two groups of individuals were studied. One group consisted of persons who had had at least one accident within recent months in which they had also incurred a moving traffic violation. The other group consisted of persons who had neither been involved in any kind of accident nor incurred a traffic violation of any type throughout their driving careers.

Those tested were examined on each of three successive days. The first day they received the Minnesota Multiphasic Personality Inventory and were interviewed if time allowed. The second day they were given the Army General Classification Test (GCT) (civilian version), the Kuder Preference Record (personal form), and the Bell Adjustment Inventory, and were interviewed if this had not been done the first day. On the third day the subjects were given a questionnaire composed of 212 miscellaneous attitude items, the Rosenzweig Picture Frustration Study,[2] and a sentence completion test.*

From Naval Medical Field Research Laboratory, Camp Lejeune, N. C. Lt. McGuire is now assigned to U. S. Naval Hospital, Philadelphia, Pa.

Acknowledgement is given to Sgt. Donald D. Hergenreder, USMC, for his skilled assistance in gathering and processing these data.

*The results of the sentence-completion test were not used in this study.

The attitude items used were gathered from many sources. Thurstone's scales for measuring "Attitude Toward Law," Forms A and B (prepared by Daniel Katz), were included intact, as was the scale, "Attitude Toward War" (prepared by Ruth C. Peterson). Selected items were taken from a list of words and phrases published by Donald W. Conover and from the Siebrecht Attitude Scale (attitude toward driving). A number of original items were also placed in this list.

The interview was based on 15 items. The first 11 items were: name, rank, serial number, local address, whether the person was drafted or volunteered, length of military service, age, marital status, number of children, highest grade completed in school, and number of years of experience driving on state highways. The last four items asked for an estimate of miles driven within the last year, an estimate of miles driven the year before that, and approximate dates of all previous accidents and traffic violations.

The first 11 items were asked routinely, but the interview was conducted in a more permissive manner concerning the other items in order to arrive at the most nearly correct answers. The subject was assured that what he said would be held in strictest confidence. It was explained to him that full information concerning his driving experience was needed only for the purposes of the present study. Similar assurance was given to all groups before the testing sessions were begun.

In addition to these factors, intelligence test scores (as derived by GCT score) were considered. These scores were merely compared statistically on a group basis. The respective means were 108.7 and 109.2, with standard deviations of 17.6 and 14.8. The significance of difference between the means is represented by a critical ratio (c.r.) of 0.1947, which is not significant.

From the 446 subjects tested, 67 accident- and violation-free drivers were matched with 67 drivers, each of whom had had an accident in recent months and had incurred a moving violation at the same time. The basis of selection of these groups is shown in tables 1 and 2.

An item analysis was performed on all items from the tests referred to above. Those test items that differentiated between the two groups to at least the 5 per cent level of confidence were selected to comprise the Safe-Driver (S-D) Inventory.

ADMINISTRATION OF THE S-D INVENTORY

The S-D Inventory (Form A) consists of five parts with a separate set of instructions for each part. The tester reads aloud

TABLE 1. *Characteristics of accident and accident-free, violation-free groups*

Driving experience in years	*A-V free*	*A*
0-2.9	6	6
3-5.9	17	18
6-7.9	22	22
8-9.9	11	11
10 and over	11	10
Age		
18-21	15	15
22-25	44	44
26-30	4	4
31-40	4	4
Marital status		
Single	39	39
Married, no children	18	18
Married with children	10	10
Two-year mileage		
0-5,000	9	9
5,001-10,000	9	9
10,001-15,000	7	7
15,001-20,000	7	7
20,001-30,000	16	16
30,001-40,000	4	4
40,001-50,000	5	5
50,001 and over	10	10
Education		
Grades 4-8	12	14
Grades 9-12	47	47
Grades 13-16	8	6
Years in service		
0-1.9	22	22
2-4.9	30	30
5 and over	15	15

TABLE 2. *Accident-violation record of accident group (lifetime)*

Accidents (with and without violations*)	Violations* (without accidents)				
	0	1	2	3	6
1 (with)	9	18	2	1	1
2 (with)	3	5	–	1	–
2 (1 with; 1 without)	8	1	5	3	–
3 (1 with; 2 without)	3	1	–	–	–
3 (2 with; 1 without)	–	1	2	–	–
3 (with)	1	1	–	–	–
5 (3 with; 2 without)	–	1	–	–	–

*All violations listed are moving violations.

the directions for the whole Inventory. He then reads aloud the instructions for part 1. When testees have finished part 1, he reads aloud the instructions for part 2. This process is repeated for all five parts.

There is no time limit, but when administered to a group, the time seldom exceeds 45 minutes.

SCORING OF THE S-D INVENTORY

The test is scored by obtaining the algebraic sum of the plus and minus responses. Those responses which are like those of the accident- and violation-free normative group are scored plus; those that are like those of the accident-violation group are scored minus.

The score is then converted in order to eliminate minus scores. If the algebraic sum is zero, the converted score is 100. If the algebraic sum is plus, it is merely added to 100 in order to obtain the converted score. If the algebraic sum is minus, it is subtracted from 100. For example, an algebraic sum of minus 5 is converted to a score of 95; a sum of plus 5 becomes 105.

VALIDITY

Because the Inventory is designed to differentiate the dichotomy of "accident-free" and "accident-involved," the validity of the test cannot be indicated by the usual statistics (*i. e.*, Pearson product moment correlation). The biserial correlation, which could be used with the Inventory data, does not enter into prediction formulas nor lead to an error of estimate. Its interpretation is also open to some question. Therefore, the test scores are presented herein in terms of "efficiency of prediction."

When used on the original two groups (tables 1 and 2), the Inventory produced an efficiency of prediction of 88 per cent. That is, the test scores correctly labeled 88 per cent of the individuals according to the group in which they belonged.

As a cross-validation two new groups were selected and administered the Inventory. There were 57 Marine Corps personnel in each group. They were equated according to years of driving experience, age, mileage, and marital status (table 3). When used on these two groups, the Inventory produced an efficiency of prediction of 65 per cent. The significance of difference between the means was equal to a critical ratio of 4.4053.

As a further check, two other groups of drivers were administered the Inventory. At the time of the test they were asked to write down their accident and violation history. There was no attempt either to determine by interview the validity of their statements or to match the groups. One group of 74 men professed to have had at least one recent accident in which they

had incurred a moving violation. The other group of 130 men professed never to have had an accident or incurred a traffic violation of any type during their driving history. When used on these groups, the Inventory produced an efficiency of prediction of 61 per cent. The difference between the two group means was equal to a critical ratio of 3.8432.

TABLE 3. *Characteristics of cross-validation groups*

Characteristic	Groups	
	Accident	Accident-free
Estimated 2-year mileage		
0 to 5,000	5	5
5,001 to 10,000	13	13
10,001 to 15,000	8	8
15,001 to 20,000	7	7
20,001 to 25,000	5	5
25,001 to 30,000	4	4
30,001 to 40,000	6	7
40,001 to 50,000	4	3
50,001 and over	5	5
Age		
17 to 20	33	33
21 to 25	17	17
26 to 30	3	4
31 to 40	4	3
Years' driving experience		
1 to 4.9	31	35
5 to 9.9	18	18
10 to 14.9	4	2
15 and over	4	2
Marital status		
Single	36	38
Married, no children	11	10
Married, with children	10	9

Finally, a single group of 60 Marine Corps personnel were administered the Inventory. These men all admitted to at least one recent accident in which they also incurred a violation. Their test scores successfully predicted their status 70 per cent of the time.

RELIABILITY

The coefficient of reliability for the S-D Inventory is 0.89. This was obtained by giving the test to an unselected sample of 227 marines, correlating the odd-even items, and using the Spearman-Brown prophecy formula.

NORMS

The norms for the S-D Inventory are based on the cross-validation groups described in table 4. The parameters of these two groups are as follows: Accident group—a mean of 102.39 with a standard deviation of 13.31; accident-violation free group—a mean of 113.96 with a standard deviation of 14.48.

TABLE 4. *Accident record of the accident-involved cross-validation group*

Accidents (with and without violations*)	Violations* (without accidents)						
	0	1	2	3	4	5	6
1 (with)	15	9	3	–	–	–	–
2 (with)	1	2	–	–	–	–	–
2 (1 with; 1 without)	6	4	1	2	–	1	–
3 (1 with; 2 without)	–	1	–	–	–	1	2
3 (2 with; 1 without)	–	–	2	–	–	–	–
4 (1 with; 3 without)	2	–	–	–	–	–	–
4 (2 with; 2 without)	1	–	–	–	–	–	–
4 (3 with; 1 without)	–	–	–	–	1	–	–
5 (1 with; 4 without)	–	1	1	–	–	–	–
6 (with)	–	1	–	–	–	–	–

*All violations listed are moving violations.

Table 5 outlines the efficiency of prediction for the Inventory for different cut-off scores. The maximum total efficiency is 64.90 per cent. However, by using different cut-off scores, the

TABLE 5. *Efficiency of prediction for S-D Inventory (Form A)*

Cut-off scores	Groups correctly predicted		
	Accident (per cent)	Accident-free (per cent)	Total (per cent)
102-103	48.80	77.64	63.22
103-104	51.99	75.49	63.74
104-105	64.78	73.24	69.01
105-106	57.93	70.88	64.41
106-107	60.64	68.44	64.54
107-108	63.68	65.91	64.80
108-109	66.28	63.31	64.80
109-110	69.15	60.64	64.90
110-111	71.57	57.93	64.75
111-112	74.22	55.57	64.90
112-113	76.42	52.79	64.61
113-114	78.81	50.00	64.41

Inventory may be used to raise the efficiency of prediction for one group or the other. This may be of practical value when it is desired to select the maximum number of one group and there is no need to be concerned over the lessened efficiency for predicting members of the other group. Table 3 may be expanded to include other cut-off scores by merely using the normal curve areas described by the above parameters.

Because every psychometric test contains a certain margin of error, it is important for a test administrator to know the margin of error involved in any given score. Table 6 tells how positive one can be that a given score correctly labels any particular testee.

TABLE 6. *Efficiency of prediction for any score on the S-D Inventory, Form A*

Score	Percent chance of belonging to either group		Score	Percent chance of belonging to either group	
	Accident-free	Accident		Accident-free	Accident
134 or above	99.1	0.9	102	48.8	51.2
133	98.9	1.1	101	46.0	54.0
132	98.7	1.3	100	42.9	57.1
131	98.4	1.6	99	40.1	59.9
130	98.0	2.0	98	37.1	62.9
129	97.7	2.3	97	34.5	65.5
128	97.3	2.7	96	31.6	68.4
127	96.8	3.2	95	29.1	70.9
126	96.2	3.8	94	26.4	73.6
125	95.5	4.5	93	23.9	76.1
124	94.7	5.3	92	21.8	78.2
123	93.9	6.1	91	19.5	80.5
122	92.9	7.1	90	17.7	82.3
121	91.9	8.1	89	15.6	84.4
120	90.7	9.3	88	14.0	86.0
119	89.4	10.6	87	12.3	87.7
118	87.9	12.1	86	10.9	89.1
117	86.4	13.6	85	9.5	90.5
116	84.6	15.4	84	8.4	91.6
115	82.9	17.1	83	7.2	92.8
114	80.8	19.2	82	6.3	93.7
113	78.8	21.2	81	5.4	94.6
112	76.4	23.6	80	4.6	95.4
111	74.2	25.8	79	3.9	96.1
110	71.6	28.4	78	3.4	96.6
109	69.2	30.8	77	2.8	97.2
108	66.3	33.7	76	2.4	97.6
107	63.7	36.3	75	2.0	98.0
106	60.6	39.4	74	1.7	98.3
105	57.9	42.1	73	1.4	98.6
104	54.8	45.2	72	1.1	99.9
103	52.0	48.0	71	0.9	99.1

If the S-D Inventory is to be used with Marine Corps personnel, the question arises as to whether the test was standardized on a sample that is representative of all marines. Therefore, the test scores of the 114 subjects who comprised the cross-validation were compared with the test scores of an unselected sample of 1,215 enlisted marines at Camp Lejeune (fig. 1).* This latter sample was drawn from nearly every battalion-size unit at Camp Lejeune. Each unit was assigned a quota according to its current strength, and this number of men were presented for testing on an available basis.

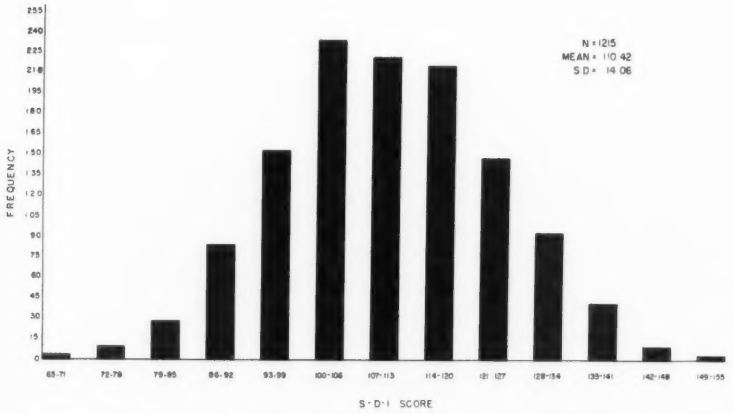

Figure 1. Safe-driver inventory scores, Form A, for 1,215 unselected subjects.

When submitted to chi-square analysis for goodness of fit, the result is a P. of 0.50. This means that the differences between the test score distributions of the normative groups and the unselected sample could be expected by chance alone at least 50 per cent of the time. Therefore, we cannot assume that the normative groups were drawn from a sample *not* representative of the enlisted population of Camp Lejeune.

INTERPRETATION

It is important to remember that Inventory scores result in only two categories—"safe" (*i. e.*, accident and violation free) and "other" (*i. e.*, accident and violation involved). A sufficiently high score may allow us to assume that a person has traits and attitudes similar to the accident- and violation-free driver. However, a low score on this test does not allow us to label a person as being "accident-prone." It may only be said that he has traits and attitudes similar to that part of the driving population that possesses an accident-violation record for which they may be held at least partially responsible.

*Total enlisted population of Camp Lejeune is approximately 36,000.

The Inventory was designed to predict the safe driver rather than the "accident-prone" driver partly because of necessity. It is this author's belief that a group of persons may be accident repeaters for almost as many reasons as there are patterns of maladjustment, but that an accident-free group reflects a single pattern. Therefore, a group selected as an experimental group on the basis of a repeated accident record is likely to reflect closely the personality attributes of the population at large, especially when compared with a control group of low-accident cases. The theory of the Inventory is that the accident-free group is basically different from all other accident classifications.

THE S-D INVENTORY: FORM B OR SHORT FORM

The Safe-Driver Inventory, Form B (short form), is composed of 35 true-false items and is designed to do the same task as Form A. Forms A and B correlate 0.85 (Pearson ratio), based on 114 subjects.

The items in Form B are the same as those items in part 1 of Form A. Form B is scored by the same method as Form A and is administered according to the instructions given for part 1 of Form A. There is no time limit, but when administered to groups, the time seldom exceeds 10 minutes.

VALIDITY

When the two matched groups described in tables 3 and 4 were scored for their responses to Form B, the efficiency of prediction is 66 per cent. The critical ratio between the means was 5.0392.

Two other groups of drivers described earlier in this article were scored for their responses to Form B. At the time of the test they were asked to write down their accident and violation history; no interview was given. One group of 74 men professed to have had at least one recent accident in which they had also incurred a moving violation. The other group of 130 men professed never to have incurred an accident or violation of any type during their entire driving history. When used on these groups, Form B produced an efficiency of prediction of 60 per cent. The critical ratio between the means was 4.0495.

RELIABILITY

The coefficient of reliability for the S-D Inventory, Form B, is 0.76. This was obtained by scoring the responses of 117 unselected marines to part 1 of Form A. Odd-even items were correlated and modified by the Spearman-Brown prophecy formula.

NORMS

The norms for the S-D Inventory, Form B (short form) are based on the following parameters: Accident group—a mean of 101.21

with a standard deviation of 7.62; accident-violation free group—a mean of 108.49 with a standard deviation of 7.67.

Form B is to be interpreted in the same way as Form A, using the information in tables 7 and 8 and in figure 2.

TABLE 7. *Efficiency of prediction of S-D Inventory, Form B (short form)*

Cut-off scores	Groups correctly predicted		
	Accident (per cent)	Accident-free (per cent)	Total (per cent)
101-102	48.80	80.23	64.52
102-103	53.98	76.42	65.20
103-104	59.10	72.24	65.67
104-105	64.43	67.72	66.08
105-106	69.15	62.93	66.04
106-107	73.57	57.53	65.55
107-108	77.64	52.39	65.02
108-109	81.33	47.21	64.27

TABLE 8. *Efficiency of prediction for any score on the S-D Inventory: Form B, (short form)*

Score	Percent chance of belonging to either group		Score	Percent chance of belonging to either group	
	Accident-free	Accident		Accident-free	Accident
119	99.0	1.0	100	43.6	56.4
118	98.6	1.4	99	38.6	61.4
117	98.1	1.9	98	33.7	66.3
116	97.4	2.6	97	29.1	70.9
115	96.5	3.5	96	24.8	75.2
114	95.4	4.6	95	20.9	79.1
113	93.9	6.1	94	17.1	82.9
112	92.2	7.8	93	14.0	86.0
111	90.0	10.0	92	11.3	88.7
110	87.5	12.5	91	9.0	91.0
109	84.6	15.4	90	7.1	92.9
108	81.3	18.7	89	5.5	94.5
107	77.6	22.4	88	4.2	95.8
106	73.6	26.4	87	3.1	96.9
105	69.2	30.8	86	2.3	97.7
104	64.4	35.6	85	1.7	98.3
103	59.5	40.5	84	1.2	98.8
102	54.0	46.0	83	0.8	99.2
101	48.8	51.2			

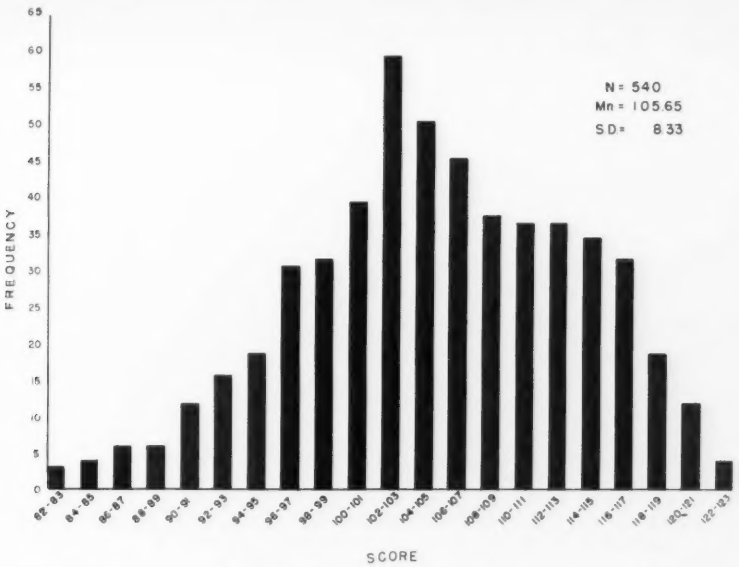

Figure 2. Safe-driver inventory scores, Form B, for 540 unselected subjects.

SUMMARY

The Safe-Driver Inventory is a paper and pencil test designed as an aid in the selection of the safe automobile driver. The test items are of the personality type and were selected from a large number of items that differentiated between two groups of drivers to at least the 5 per cent level of confidence.

Form A is composed of 89 items, and Form B of 35. The two forms correlate 0.85 and produce reliability coefficients of 0.89 and 0.76, respectively. Both forms correctly predict the status of the members of a group about 65 per cent of the time. This prediction may be increased for one group if the resulting loss of predictive ability for the other group is not a problem.

The Inventory is based on the hypothesis that the accident-free driver provides a more suitable group for accident research than does the accident-repeater.

REFERENCES

1. McGuire, F. L.: *Psychological Comparison of Accident-Violation Free and Accident-Incurring Automobile Drivers.* NM 005 052.33.04. Naval Medical Field Research Laboratory, Camp Lejeune, N. C., Feb. 1955.

2. McGuire, F. L.: Rosenzweig Picture Frustration Study for selecting safe drivers. *U. S. Armed Forces M. J.* 7: 200-207, Feb. 1956.

Appendix (Safe-Driver Inventory) on following page.

APPENDIX

The Safe-Driver Inventory*

Part 1

This part consists of numbered statements. Read each statement and decide whether it is *true as applied to you* or *false as applied to you.*

You are to mark your answers in the circles. If a statement is *true* or *mostly true* as applied to you, mark the circle in the column headed T. If a statement is *false* or *not usually true* as applied to you, mark the circle in the column headed F. If a statement does not apply to you or if it is something that you don't know about, make no mark.

Remember to give *your own* opinion of yourself. *Do not leave any blank spaces if you can avoid it.* Try to make *some* answer to every statement.

Part 1 of Form A

(also used as Form B)

1. My daily life is full of things that keep me interested.
2. I seldom worry about my health.
3. As a youngster I was suspended from school one or more times for cutting up.
4. I am a good mixer.
5. I have not lived the right kind of life.
6. I like poetry.
7. I think I would like the kind of work a forest ranger does.
8. I am easily downed in an argument.
9. I go to church almost every week.
10. I have very few quarrels with members of my family.
11. I believe women ought to have as much sexual freedom as men.
12. Someone has it in for me.
13. I believe in a life hereafter.
14. I enjoy a race or game better when I bet on it.
15. I know who is responsible for most of my troubles.
16. I like collecting flowers or growing house plants.
17. At times I feel like picking a fist fight with someone.
18. I have often lost out on things because I couldn't make up my mind soon enough.
19. It wouldn't make me nervous if any members of my family got into trouble with the law.
20. I liked school.
21. I have used alcohol excessively.

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*Instructions as printed here are condensed from those in the original test.

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22. I get mad easily and then get over it soon.
23. It is safer to trust nobody.
24. I am likely not to speak to people until they speak to me.
25. I have never been in trouble with the law.
26. In school I found it very hard to talk before the class.
27. At times I have very much wanted to leave home.
28. I am inclined to take things hard.
29. I do not like to see women smoke.
30. I like to attend lectures on serious subjects.
31. I would like to be an auto racer.
32. Christ performed miracles such as changing water into wine.
33. I pray several times every week.
34. I prefer work which requires close attention, to work which allows me to be careless.
35. I like to read about history.

Part 2

This part is used for obtaining a record of your preferences. It is not a test. There are no right or wrong answers. An answer is right if it is true of you.

A number of activities are listed in groups of three activities in each group. Decide which of the three activities you like most, then decide which activity you like least, and make a mark in the appropriate circle.

Some of the activities involve preparation and training. In such cases, just suppose that you could first have the necessary training. Do not choose an activity merely because it is new or unusual. Choose what you would like to do if you were equally familiar with all of the activities.

In some cases you may like all three activities in a group. In other cases you may find all three activities unpleasant. Show what your first and last choices would be, however, if you *had* to choose. Some of the activities are imaginary. Some activities may seem trivial or foolish. Indicate your choices, anyway, for all of the groups.

36. A. Read about the jungles of Africa.
    B. Read various people's ideas of how to make a better world.
    C. Read about what various well-known people do in their spare time.

37. A. Read about more efficient methods of learning to do things.
    B. Read about interesting places in the United States.
    C. Read about new developments in airplanes.

38. A. Read about famous men and women in public life.
    B. Read various writers' descriptions of what an ideal world would be like.
    C. Read about the lives of the early pioneers of the country.

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39. A. Tell a person just what you think of him even though it is unpleasant.
    B. Say something nice to a person even if you don't like what he has done.
    C. Not tell a person what you think if it is unpleasant.

40. A. Make arrangements for a banquet for a special occasion at a restaurant.
    B. Collect the money for the banquet from the people there.
    C. Attend the banquet with no special responsibility.

41. A. Entertain a group of friends with tricks of magic.
    B. Entertain a group of friends by playing a musical instrument.
    C. Watch someone else perform.

42. A. See movies of battle scenes.
    B. See movies of beautiful scenes in various countries.
    C. See movies of horse racing.

43. A. Be the warden of a prison.
    B. Be a college dean.
    C. Be in charge of a school for feeble-minded children.

44. A. Track down criminals.
    B. Be in charge of a prison.
    C. Conduct studies to find out the way criminals think.

45. A. Advise people concerning improving their personalities.
    B. Catch rare animals for a museum.
    C. Cash checks for people in a bank.

46. A. Be a college professor.
    B. Be in charge of students' social activities in a college.
    C. Be the business manager of a college.

47. A. Read a story laid in a fashionable winter resort.
    B. Read a story laid in an imaginary world.
    C. Read a story laid in a big city.

48. A. Teach children who are not very bright.
    B. Teach average children.
    C. Teach very bright children.

49. A. Read the funnies in a newspaper first.
    B. Read the news in a newspaper first.
    C. Read the editorials in a newspaper first.

50. A. Explore the site of an ancient city.
    B. Give lectures about ancient cities.
    C. Write articles about ancient cities.

51. A. Be an ambassador.
    B. Be a member of Congress.
    C. Be a government employee.

52. A. Be the manager of a large business.
B. Be an employee in a large business.
C. Be the mayor of a large city.

53. A. Answer questions about what you do.
B. Answer questions about what you know.
C. Answer questions about what you think.

54. A. Go to an exclusive night club.
B. Go to an amusement park.
C. Go to a reception for a famous person.

55. A. Watch machinery in a factory.
B. Watch boats being unloaded.
C. Watch people in a railroad station.

56. A. Build the scenery for a play.
B. Act in a play.
C. Design the costumes for a play.

57. A. Work mainly with things.
B. Work mainly with people.
C. Work mainly with ideas.

58. A. Be a teacher.
B. Be a school principal.
C. Be a superintendent of schools.

59. A. Be a college professor.
B. Be the governor of a state.
C. Be a famous engineer.

60. A. Be a prize fighter.
B. Manage a prize fighter.
C. Broadcast prize fights.

61. A. Always be kind to people.
B. Always be right.
C. Always have enough money.

62. A. Play cards.
B. Go to the movies.
C. Go to a big party.

63. A. Go to a circus.
B. Go to a boxing match.
C. Go to a tennis match.

Part 3

Read each question carefully and answer *"yes"* or *"no."* If you are undecided, answer with a question mark (?). Make sure that you make some answer to every question.

64. Do you find it very difficult to speak in public?

65. Have you had a number of experiences in appearing before public gatherings?

66. Have you been able to get the promotions you desire in your present job?

67. Are you often sorry for the things you do?

68. Would you like very much to move from the place where you now live so that you might have more personal independence?

69. Have you ever been seriously injured in any kind of an accident?

70. Would it be difficult for you to give an oral report before a group of people?

71. As a youth did you ever have a strong desire to run away from home?

Part 4

In the following part you will find a series of statements. You are to decide whether or not you agree with the statement. Decide whether you *agree strongly, agree,* are *indifferent, disagree,* or *disagree strongly,* then mark the appropriate circle.

72. Under some conditions, war is necessary to maintain justice.

73. The benefits of war rarely pay for its losses even for the victor.

74. Trailer trucks should be outlawed from the highway.

75. Driving a car is practically automatic—a good driver doesn't need to think about what he's doing.

76. Most accidents can't be helped.

77. The law does not benefit the common man.

78. How many accidents a guy has is more a matter of luck than of his driving ability.

Part 5

In the following part you will find a series of phrases or words. Look at each one, and decide if the phrase or word is *very pleasant* to you, if it is just *pleasant,* if you are *indifferent* to the phrase, if it is *unpleasant,* or *very unpleasant.* Mark your answers accordingly.

79. liquor party
80. beer tavern
81. hymn
82. nun
83. whisky
84. universities
85. dog race
86. socialism
87. side roads
88. scientific investigation
89. using tire chains in the mud

More imagination with quiet thinking is needed.

—Martin T. Fischer

ENURESIS

Psychiatric Interview Studies

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AS PART of a multifactorial investigation into the common problem of symptomatic immaturity habits, an attempt has been made to outline psychologic trends in 60 enuretic naval recruits as contrasted with 60 nonenuretic men, who had matriculated in the Electronics School. This report is a redaction of a heterogeneous mass of interview data in which an effort was made to extract only the lines of general personality direction, so that areas could be located for further theoretic and therapeutic research. In the spirit of disinterested inquiry, any effort of this sort must be criticized keenly, lest insignificant aspects of personality supersede factors of importance.

Superficially, the two groups studied represent the poles of psychologic suitability for the military, because the student group is deemed superior material and the enuretic group, by definition, is so inferior that they are forced into accepting discharge from the Navy. This unhappy circumstance obliged comparison between an experimental group and a homogeneous rather than a random control group. As a result of this disparity the socioeconomic backgrounds were adversely biased to the disfavor of the enuretics. Besides an inherent socioeconomic advantage, the controls were predominantly easterners (the Electronics School receives men according to qualifications from the entire fleet, while the recruits at this naval training center come from the midwestern and southern states); all were Caucasians, and they were slightly older than the recruits by an average of 1.6 years (19.2::17.6 years).

Transference and countertransference problems were similar in interviewing both groups. The examiner was the agent of inconvenience for the subjects and symbolized an authority who could command that the subjects be on call for interviews, physical examinations, electroencephalograms, projective tests, and

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laboratory procedures. Many of the students were chagrined when delayed in classroom progress, inasmuch as such delay increased the strain under which they labored in order to complete their school courses. The enuretics were piqued because their presentation to an Aptitude Board which recommended their discharge from the service was delayed. Many of the men in both groups were apprehensive in regard to the prospective electroencephalographic testing and other procedures.

Despite these seemingly insuperable barriers it is believed that rapport was not damaged severely, and the chief limitation to the study, exclusive of the sampling error, was that in the short interview the men showed varying perspicacity and varying willingness to discuss certain topics. Nevertheless, from the subjective opinions of each man, we were able to visualize some characteristics of the enuretic, which previously had not been emphasized in the medical literature. Most of the voluminous literature on enuretics concerns the child enuretic. This article is a consideration of the problem of enuresis in males persisting through adolescence.

PROCEDURE

In all cases the subject was seen in a clinical summation interview for about 35 minutes by the same medical officer (C. M. P.). The interview was structured and demanded many direct questions in order to obtain cursory, uniform material on each person. The individual's appearance, mood, and speech were observed. He was interrogated concerning life goals, hobbies, neuropathic traits, psychogenetic dynamics, interpersonal relationships, and his attitude toward the Navy.

Prior to the above-mentioned interview each man had completed a form giving his past history of enuresis. The examiner then had at his disposal specific information in regard to duration and frequency of enuresis, and the individual's observations about situations which exacerbated or decreased the enuresis. Much of the interview was focused on this information as well as on the person's ideation toward enuresis and any limitations or discomfiture it might have precipitated during his life.

The recruits who were examined were seen after the interviewer had also acquainted himself with the individual's screening sheet. This is a form completed by the recruit when he enters service and records motivation for enlistment, history of any antisocial behavior, occupational and scholastic adjustment, group participation, the recruit's expected adaptation to naval life, somatic complaints (particularly those without probable organic basis), and evidence of any persecutory or paranoiac ideation. Because each recruit is seen by a psychiatrist or a psychologist or both, when he enters service, and this screening form is used by the examiner during that screening interview, the com-

mentaries and prognostications for service adaptation made by that examiner also appear on these forms.

Another source of vital information about the recruits came from the company commander reports. These reports evaluate the recruit's performance and progress in training, estimate his naval aptitude, and describe his interpersonal relationships as viewed by the company commander. Inasmuch as it is customary for all enuretic recruits to be placed in the neuropsychiatric unit, the recruits described in this report were under such surveillance. Therefore further information was gathered from nursing notes relative to the behavior and attitude of the recruits while in the neuropsychiatric unit.

To verify any alleged history of chronic enuresis, social service reports were obtained from the home town of each enuretic. The report often afforded additional knowledge about the man, particularly concerning his developmental and environmental history.

RESULTS

Interview Situations. As a group, the controls seemed less threatened by the interview, calmer, more co-operative, less dejected, and less apt to give evidence of emotional lability (such as crying). When one accounts for the realistic situation that the enuretics, being desirous of discharge, were more agitated merely by being kept in the Navy, there is no need to look further for such factors as intelligence to account for this observation. Even so, the only difference between the groups was that about 50 per cent of the enuretics showed muscular rigidity and tenseness during the interview, as compared with about 25 per cent of the controls showing the same overt uneasiness.

Stature. Forty (66.67 per cent) of the control subjects and 25 (41.67 per cent) of the enuretics were judged to be well developed, *i. e.*, they appeared to possess both average strength and bodily characteristics commensurate with their chronologic age. This observation is not of statistical pertinence. However, in view of the stereotyped opinion of the laity and the frequent assertion in the literature that the enuretic is physically immature, height and weight measurements at the time of entrance into naval service were tabulated from the service health records. Utilizing a critical ratio formula, it is found highly significant (P less than 0.01) that the controls, on the average, were taller and heavier (table 1).

Attitude Toward Enuresis. Fourteen of the controls had been enuretic prior to age 17. Eleven of these men had vigorously sought a cure through psychologic maneuvers and stated that they had overcome enuresis because of a parental stimulus or

elimination of personal "laziness." Only 11 of 60 in the experimental group told of similar attitudes.

TABLE 1

	Controls	Enuretics	t	P
Average weight	155.7 lb.	144.1 lb.	13.03	<0.01
Average height	69.4 in.	67.7 in.	4.1	<0.01

In the enuretic group the most outstanding find was that 27 of these men readily admitted indifference to their habit and seemed placid and unperturbed in their resignation to the difficulty. Typical outlooks were: "Everybody knows there's nothing I can do about it;" "God made me do it, God will stop it;" or "It really doesn't bother me."

Forty-four of the enuretics volunteered feelings of shame and embarrassment, but usually only because of drastic social immobility due to bed-wetting, for example, "I couldn't even go to Boy Scout Camp," or "I can't stay with a girl overnight."

Five enuretics alleged repugnance to enuresis at the sensory level, because the bed was cold, wet, or malodorous. Five enuretics made spontaneous admission to an attitude which reflected a subjective opinion of their own diminutiveness, example, "It makes me feel mighty little," or "It's like I'm a small boy." The enuretics studied were not seriously hampered or distressed by the persistence of bed-wetting. In general they exhibited attitudes of indifference and shallow emotional regard for their defect.

Vocational Aspirations. As expected, the controls demonstrated more conation and loftier ambitions (table 2). It was interesting that in response to the question concerning future plans, eight of the enuretics first answered that they must work to care for someone else, usually their parents. The context of the interview allows interpretation of this response as emphasizing dependency problems in the enuretic, who projects his own desires onto his parents. The student, already more favorably endowed, is acquiring a useful trade while in the service and he has less conflict concerning his future independence.

Avocational Interest. Again, as expected, the controls showed a greater diversity of activity, although both groups had members who pursued categories of hobbies which were pursued in the other group (table 3). It is statistically significant that the controls had more than twice as many hobbies as the enuretic subjects (χ^2=12.50, P<0.01). No significant differences could be found in the groups' inclinations to carving, hammering, and hunting. Whereas six of the students were photographers, none of the enuretics mentioned photography.

TABLE 2. *Vocational aspirations of controls and enuretics*

Future plans	Controls	Enuretics
None	10	16
Professional	4	1
	(Medicine, law, teaching)	(Baseball)
Skilled labor or continuance of education	46	23
Unskilled labor	0	12
Farming	0	8

TABLE 3. *Avocational interests of controls and enuretics*

Hobby	Controls	Enuretics
None	19	28
Outdoor recreations	15	10
Mechanics	10	11
Crafts	10	3
Modeling	11	3
Music	5	2
Electronics	9	0
Collecting	7	2
Total	67	31

Sports. The athletic interests of the groups were, for practical purposes, identical (table 4). When it is considered that the controls, as a group, had greater opportunity for sports participation (more of them went to high school, fewer of them were forced to work) one wonders if the controls are less sports minded than usual or if the enuretics are particularly inclined to sports either because of pseudomasculine strivings or a "Peter Pan" complex.

Neuropathic Traits. Each group had approximately 24 persons who were nail biters, 5 who had been thumb suckers, 10 who stammered or stuttered, 20 who had suffered recurrent terrifying dreams which woke them from sleep, and 12 who had a history of temper tantrums.

Thirty-three of the controls and only one of the enuretics averred dreams in which they were engaged in sexual intercourse. Usually the female in the dream was a beautiful stranger, of the same age as the subject. Frequently, the sex partner was a

known girl with whom the subject had been intimate or would like to seduce. No clear-cut mother surrogate was depicted in these dreams. One control, with rampant homosexual problems, told of repetitive dreams in which he became "panicky" when another male would sit on his head.

TABLE 4. *Athletic interests of controls and enuretics*

Athletic interest	Controls	Enuretics
No interest	18	16
Moderate (some participation in organized athletics and some general knowledge about sports)	12	13
Active (greater interest than in moderate group)	30	31

A wide variety of phobic reactions, including aquaphobia, agoraphobia, hematophobia, astrophobia, claustrophobia, and electrophobia (in an Electronics School student), were mentioned in both groups. However, the striking discovery, statistically, was that 18 of the enuretics and only three of the controls in their opinion, sometime in their life, had had a nyctophobia (χ^2=9.34, P<0.01). Eighteen of the enuretics and 11 of the controls suffered acrophobia. These men presented a consistent picture of a syndrome of vertigo and nausea in addition to anxiety when at relatively innocuous heights such as up in a silo or in a tree.

In the interview situation 16 enuretics and 2 controls knew of a past history of somnambulism. The statistical significance of the relationship between enuresis and sleepwalking is borne out clinically, by further observation on both bed wetters and somnambulists as reported by us in other articles.[1,2]

Some miscellaneous disturbances were present, singularly, in the enuretics and may be regarded as of only incidental interest. One enuretic, diagnosed as psychotic, had delusions concerning meat eating and was proud to be a strict vegetarian. Another enuretic recalled that in childhood, he would ingest any and all objects indiscriminately (pica).

Still another enuretic was a classic obsessive-compulsive dating from the death of a younger brother eight years before, following prayers by the patient that his sibling would die. His enuresis antedated the sibling's birth and preceded the formation of the neuroticism. This neurosis eventuated in serious mishaps, such as an automobile accident in which the patient compulsively turned his head 10 times and braked the pedal 10 times even

though he could reason that by acting with celerity he could have averted a collision.

The enuretics showed a greater spectrum of neurotic traits. The important trends were in the area of phobic reactions (enuretics were very susceptible to nyctophobia and acrophobia) and the proclivity to somnambulism by the enuretics. The majority of the controls had wish-fulfilling dreams of a sexual nature that probably were subsequent to a more suppressed attitude in procuring actual sexual gratification.

Special Fears. Table 5 lists "special" fears experienced by the enuretics. In all cases the enuretic alleged existence of these fears because he wondered whether or not he was different from others. Then too, there was the practical matter of sharing a wet bed with a lifetime soulmate. Some of the men feared transmitting their defect to an offspring.

TABLE 5. *Special fears noted by enuretic and control subjects*

Fear	Controls		Enuretics	
	Number	Per cent	Number	Per cent
Afraid to marry	0	0	28	46.67
Afraid he may be sterile	0	0	10	16.67
Afraid he may be impotent	0	0	6	10
Afraid he may go insane	0	0	4	6.66
None of above fears	60	100	12	20

These special fears are probably peculiar to the male enuretic whose immaturity habit plays havoc with the resolution of normal problems of adolescence. On a deeper plane, the data would reinforce the impression tnat the adolescent enuretic has much doubt relative to his adequacy as a man and to his ability to perform satisfactorily as a man.

Bed-Wetting Factors. Seventeen of the enuretics and 3 of the 14 controls who had been enuretic noted that having a dream in which they were urinating was associated often with frank enuresis. Eleven of the enuretics and two of the controls had been excessively teased by family members because of bed-wetting. The mothers of 21 of the enuretics cleaned the bedding following enuresis.

Men in both groups were perplexed concerning situations which increased or decreased their likelihood to bed wet. Both groups indicated the importance of fluid regulation following supper, and both groups of men noted that bed-wetting might occur when

they got cold from lowered room temperature or fewer blankets. In the experimental group, other factors which were associated with increased enuresis were nervousness, exercise or work, and "heavy" sleeping. The factors which decreased enuresis were sleeping in an orthopneic position, staying up past midnight, and sleeping during the daytime (rather than at night).

The enuretics seemed willing to inconvenience their mothers, whom they expected should manage their bedding. Like the finding of propensity to "urinating" dreams, this is in agreement with the investigations on the child enuretic. Any suggestive trend in this material would support an hypothesis that the enuretic has disturbances in the physiology of his sleep.

Sleeping Arrangements. Table 6 lists sleeping accommodations of controls and enuretics. Whereas only 14.3 per cent of the controls had slept with another enuretic during their period of enuresis in childhood, nearly 25 per cent of the enuretics slept with another enuretic. Usually he was not competitive with the enuretic sibling in an effort to cease bed-wetting. In all cases where the enuretic slept with someone else despite the habit, the other person was not excessively annoyed when made wet.

TABLE 6. *Sleeping accommodations*

Accommodation	Controls (while they were enuretic in childhood)	*Enuretics (in the 3 years prior to enlistment)
Slept alone	7	44
Slept with enuretic brother	2	13
Slept with older sister	0	1
Slept with nonenuretic brother	5	8
Slept with father	0	3
Slept with mother	0	1

*Some enuretics had had several combinations of sleeping arrangements, thus the total of 70 responses in this column.

The overwhelming majority of enuretics persisted to bed wet even though they slept alone and there was no need to continue the habit in order to agitate for more "living space" or special accession from the family.

In the case of the teen-ager who slept with his mother until one and one-half years before entering service, he was the one who demanded a modification in the sleeping accommodations. He remarked cogently, "It don't look good for a man to be sleeping with his ma."

Heterosexual Activity. Forty (66.67 per cent) of the enuretics and 32 (53.33 per cent) of the controls had experienced sexual relations. The examiner believed that the enuretics were more honest in discussing this topic. Many of the controls responded without conviction and sincerity and often gave answers which they anticipated the interviewer would expect. There is no doubt that the enuretics, even though a younger group who had spent much less time away from home, began having intercourse at an earlier age and had succeeded in enticing more women. The best explanation for this observation is that the enuretic's cultural milieu is more accepting of early, frequent, and diversified heterosexuality.

Adjustive Capacity. For purposes of estimation, besides the subject's candid opinion, the history of authority relations, group participation, criminal activity and naval record was considered. The enuretics showed devaluated estimations of adjustment in all areas compared. The controls, although intellectually superior enlisted personnel, showed a high percentage of maladjustment (for example in civilian life many had failed academically or were socially unaccepted by their peers). These men, because of emotional difficulties, had never been as highly productive as their potentialities imply. Even so, by comparison the enuretics demonstrated extremely inept adjustment as a lifelong pattern in all endeavors (table 7).

TABLE 7. *Estimated adjustive capacity of controls and enuretics*

Area of estimated adjustment	Controls		Enuretics	
	Number	Per cent	Number	Per cent
Interpersonal relations estimated as less than adequate	16	26.7	21	35
School adjustment estimated as less than adequate	21	35	39	65
Service adjustment estimated as less than adequate	21	35	47	78.3

Psychogenetic Dynamics. Parents of 26 enuretics and of 4 controls were in chronic ill health during the subject's childhood (table 8). None of the mothers of the controls were ill, but some of the mothers of the enuretics were incapacitated or semi-invalided from a variety of "nervous conditions" (apparently nonpsychotic) and arthritis. The fathers of 5 enuretics were alcoholics who developed ulcers which were complicated by hemorrhagic bouts, intractability, or obstruction. The "cripples" listed were the end results of traumatic or occupational processes such as farm

TABLE 8. *Psychodynamic factors as reported by enuretic and control groups*

Dynamic factor	Controls	Enuretics
Father regarded as authoritarian	26	22
Open conflict with father	10	12
Father was physically abusive	7	10
Father regarded as alcoholic	10	15
Mother regarded as authoritarian	6	5
Open conflict with mother	8	1
Mother regarded as seductive	7	15
Father verbalizes suspicion of mother's fidelity	3	8
Subject was favorite of father or mother	4	4
Subject was favorite of both parents	1	3
Evidence of a severe sibling rivalry	7	23 *(χ^2=7.5 P<0.01)
Parents regarded as strict	2	13 *(χ^2=6.66 P<0.01)
Parents regarded as religious	14	12
Alleged idyllic home situation	36	31
Number of parents regarded to be in chronic ill health	4	26 *(χ^2=14.7 P<0.01)
Reared in a broken home	16	14
Verbalizes martyrdom to family	0	5
Number of married men	2	4
Verbalizes a belief that wife is unfaithful	0	4
Verbalizes that a divorce is being seriously considered	0	3
Average age of mother	48.7	43.0
Average age of father	49.7	47.9

*Of statistical significance.

accidents or debilitation from mining. There is no doubt that the emotional and financial deprivation subsequent to a long-standing, disabling disease in a parent (table 9) renders the enuretic group psychologically more vulnerable. It is significant that in such an atmosphere of insecurity the enuretic's personality development is further thwarted by his belief that his parents are very strict.

The child enuretic, like these teen-agers, has sibling rivalries (table 10). A breakdown of our data does not demonstrate that the birth of a rival is directly related to enuresis; 12 of the 23

rivalries in the enuretics were with older siblings. The usual nucleus for rivalry was a sibling who was more gifted in intellect, talent, physical prowess, or comeliness. In the younger male rivals, the younger brother (or twin), as a teen-ager, nearly always overshadowed the subject in athletics and popularity. One enuretic, bitterly jealous of a half sibling twice his age who supported him, believed his mother welcomed sexual advances by the half sibling.

TABLE 9. *Chronic illness in parents of controls and enuretics*

Chronic illness in parents	Controls	Enuretics
Mother		
"nerves"	0	9
arthritis	0	2
Father		
ulcer	1	0
alcoholic and ulcer	0	5
cripple	1	4
"nerves"	0	2
cancer	2	1
cardiac	0	3

TABLE 10. *Sibling rivalry*

Severe sibling rivalry	Controls	Enuretics
Rivalry with older sister	2	4
Rivalry with older brother	3	8
Rivalry with younger sister	1	4
Rivalry with younger brother	1	6
Rivalry with twin	0	1

The remaining psychogenetic material fails to sustain statistical significance in this series of cases. Once more though, there are some hints of similarities in the enuretics. The father is regarded much the same in both groups and both groups have a majority of men signifying an ideal home environment. About equal numbers of men in both groups were reared in a home broken before age 10 by death, desertion, separation, or divorce. However, the marriages seen by the enuretics are negatively influenced by a seductive mother whose loyalty is doubted by the father. In this respect it should be emphasized that only two of the seven controls who made reference to their mothers' charming physical attributes, did so in the same manner as the enuretics. The enuretic beamed as he related how he is mistaken

as his mother's husband or how "guys whistle and stomp when she walks down the street . . . she's got a real built . . . what a doll!" The qualitative difference was so great that even though quantitatively there was no statistical difference in the groups, clinically the enuretics studied were prone to think of their mothers as dazzling and irresistible sirens.

This image of mother may be basic in moulding the attitude toward marriage which was previously indicated. In the few cases of married enuretics, the women were mother surrogates who zealously indulged their husbands' dependency needs and stoically suffered being wet in bed. Yet this female is unsatisfactory to them because she is considered to be too desirable by other more capable males.

Dependency conflicts were responsible for the statements of selfless sacrifice made by the enuretics. As one enuretic pointed out, while defending a putative urgent need to be home caring for a healthy mother, "The trouble with the Navy is that most boys don't care enough for their mothers."

Personality Diagnosis. On the basis of available documents plus the brief interview, a personality formulation was made on each person with an attempt to assess him diagnostically (table 11). The multiple obstacles to such an ambition did not diminish its desirability. The diagnoses were made in accordance with the procedure outlined in the *Joint Armed Forces Nomenclature and Method of Recording Psychiatric Conditions,*[3] save for the cases of psychopathic personality which are better described as certain men unable to profit by past experience, who lack a super ego or conscience, and who demonstrate the criteria of Cleckley.[4]

TABLE 11. *Diagnostic assessment*

Diagnosis	Controls	Enuretics
Without psychiatric diagnosis	27 (45 %)	9 (15 %)
Passive aggressive-passive dependent	18 (30 %)	25 (41.67%)
Inadequate personality	0 (0 %)	7 (11.67%)
Psychopathic personality	2 (3.33%)	2 (3.33 %)
Schizoid personality	12 (20 %)	9 (15 %)
Schizophrenic	1 (1.67%)	2 (3.33 %)
Obsessive-compulsive neurosis	0 (0 %)	2 (3.33 %)
Emotional instability reaction	0 (0 %)	3 (5 %)
Aggressive reaction	0 (0 %)	1 (1.67 %)

Psychometrics were obtained on each man. Three of the enuretics were of subnormal mentality. In those instances, a predominating character defect was made the primary diagnostic consideration.

One emotionally unstable enuretic required an emergency operation to repair the left brachial artery which he severed in a suicide attempt immediately after being reprimanded for failure to carry out prescribed chores in the neuropsychiatric unit. At the same interview he was informed that because he was an epileptic he would be retained in the Navy until processed for medical discharge, rather than gaining a rapid separation by means of a general discharge.

DISCUSSION

"All manners of children from aggressive to recessive, restless to quiet, happy to sad and irritable to pleasant are included."[5] These are the words of Dr. Evans, for which "men" can be substituted for "children" to depict the emotionality of recruits plagued with the symptom of enuresis. McGuinness[6] has ascribed the symptom as expressing: (1) aggression in retaliation to fear, hatred, jealousy, or inferiority; (2) desire for attention; (3) protestation to parental domination; and (4) regression to or retention of things enjoyed in infancy. Our study would sustain such an hypothesis inasmuch as we discovered many men who exhibited these mechanisms either singly or in admixture.

A splendid study of the child enuretic shows the boy bed wetter as a youth who behaves as if inferior to his fellows and who identifies with women thus enabling him to avoid the active male role.[7] Anderson[8] noticed the child enuretic to be sensitive and unable to assume responsibilities as well as his peers. In the idiomatic, such infantile attitudes are those of "cry babies." As a group, the teen-age enuretics are "cry babies" who are insatiate in their expectations from the environment but who fail to reciprocate or grudgingly reciprocate even the slightest favor. As young adults they still shun responsibility and continue to behave as hypersensitive and inferior.

It was elected to circumvent the charged area of masturbation in the interviews. The theory that enuresis, in children, is a masturbatory equivalent or substitute concludes that enuresis may cease in puberty when masturbation begins to be overt. However, young sailors are happier to discuss their heterosexual achievements and expectations than their autoeroticism. Furthermore, in the interview so much material was requested that queries concerning masturbation might menace spontaneous verbal productions. Finally, a high frequency of masturbatory problems could be anticipated because of the age of the population studied.

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The psychodynamic motif of some young male enuretics emphasizes lifelong inability to cope with their environment and establish emotional maturity. Dependency conflict looms ubiquitously and detrimentally penetrates all facets of their lives, particularly their sexual attitudes. They exert themselves to defend against dependency through promiscuity. Yet such striving is doomed to failure because they are unable to relinquish their fantasy of themselves as helpless little boys or to banish their conscious image of their own inadequacy. Each realistic failure in life, whether it be in school, or in the gang, or in the service, further entrenches their need to gratify dependency and further confirms their belief in their own inferiority. It is this cycle which, after years of existence, brings forth the astonishing "piss on you" facade, which the enuretic recruit so flagrantly displays when seen in naval training. It is at this juncture that the symptom of enuresis expresses the psychic difficulties mentioned by McGuinness.

. Similar to other military studies, the enuretics in this investigation demonstrated marginal civilian and military adjustment.[9,10] Likewise, they were amazingly indifferent to their immaturity habit, and when they married they found masochistic wives who were unperturbed by their husband's enuresis.

Space does not permit extensive elaboration of all the dynamic possibilities connected with the low social, marital, and military adjustive capacity of the enuretic. The indication from this investigation is that the enuretic is part of a family constellation in which enuresis is permissible, if not commonplace. Such permissiveness reflects the vacillation of the parents, whom the enuretic, nevertheless, regards as strict. Accordingly, the enuretic grows up under a regimen of indecisiveness and inconsistency. In such an environment the enuretic develops hostile feelings toward a more successful sibling, who is not necessarily receiving parental preference. In fact, the parents themselves are more concerned about pressing health problems which impair seriously the earning capacity of the family and/or the amount of parental attention to the children. On top of these considerations, the enuretic sometimes is made even more insecure because of parental bickering concerning the fidelity of a provocative mother. For definitive therapy, amelioration of these family conditions would be implied.

There are organic factors of etiology which are suggested by this study besides the obvious correlations of enuresis with disturbances of sleep physiology, gross physical immaturity, and the relationship of enuresis to fluid intake. The medical historian tells of Paulus Bagellardus of Padua, author of the first pediatric text, who noted a relationship between enuresis and cold and humidity.[11] The men in this study make a similar empirical

observation. The physiologic basis for these relationships should be elucidated.

A majority of enuretics stated that their problem was decreasing as they got older. Many of these men could optimistically cite family members who had finally quit bed-wetting while in their early twenties. It is problematical, at present, if this decrease in enuresis is secondary to psychic factors (establishment of masturbation or heterosexuality), social factors (being forced into a more independent status and discovering an ability to perform independently), or organic factors (delayed neurochemical maturation).

Presently, we view enuresis as a continuum in which psychic, social, and organic factors are important in varying proportions. Those cases most clearly psychosocial are usually resolved by the teens. The male who continues to bed wet through adolescence is thought to have a large component of organicity compounding a lifetime of unfavorable psychologic and social circumstances, which perpetuate symptomatic immaturity. It is this group of men who should be scrutinized most carefully by the Navy, because entrance into the service may so modify a psychosocial situation that "organic" remedies may effect a salvaging of manpower.

The enuretics we studied may be described as having "Peter Pan" complexes. They are young adults who have refused to grow up and who are unwilling to accept responsibility. They find gratification chiefly in boyhood pursuits and hesitate to consider serious competition with men.

SUMMARY

Sixty enuretic recruits and 60 nonenuretic Electronics School students were studied. Compared with the controls the enuretics were physically smaller on entrance into the naval service. They were characteristically indifferent about their habit and less optimistic of establishing vocational independence. The enuretics exhibited a wide variety of neurotic traits and special sexual fears. They were less successful in all areas of adjustment. It was significant that they had more sibling rivalries and that their parents were strict and prone to have chronic illnesses. Psychologic, social, and organic factors are presented as possible etiologic agents. The term "Peter Pan" complex is submitted to describe the personalities of the enuretic naval recruit.

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MAN AND MACHINE

"Man made the machine but instead of remaining its master he is gradually becoming its slave. Under the impact of machine civilization, man becomes more and more machine-like himself. Instead of leaving to the machine those functions which can be performed with automatic repetition, he is in the process of automatizing and routinizing those functions which require choice and inventiveness. . . . Instead of evaluating a person as a unique combination of his constituent elements he tends to disregard the unique features for what is common and measurable. He deals with his fellow man on the basis of crude categories such as race, social group, height and body weight, number of credits which he received in his classes, man hours and all the data which can be counted and put on a punch card. Instead of using the machine for what it was invented—to give him freedom to use his creative faculties—he wants to organize society, taking the machine as a model. It must be obvious that technology does not need to lead to a loss of spiritual freedom, a loss of respect for individual differences, and to increasing security. On the contrary, it could be used for increasing freedom and encouraging the luxury of individuality. The universal state is by no means a logical, inevitable outcome of industrial civilization."

—FRANZ ALEXANDER, M. D.
in *American Journal of Psychiatry*
p. 696, Mar. 1956

RADIATION PROTECTION IN THE DIAGNOSTIC X-RAY DEPARTMENT

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ONE OF THE primary responsibilities of a radiologist is the protection of his patients and personnel from ionizing radiations. By the use of simple precautions he can reduce radiation exposure to a minimum.

The National Committee on Radiation Protection, in 1948, selected 0.3 r per week as the maximum exposure that could be received repeatedly without demonstrable effect upon the recipient. In their latest recommendations,[1] the committee has changed the term "maximum tolerance dose" to "permissible dose" to remove the implication that this dosage is harmless, and to take into account the calculated risk of genetic damage.[2]

The dosage figure remains unchanged and the Committee states that under present conditions and for some time to come, it will not consider genetic damage to the population as a whole a limiting factor in setting the permissible level. However, as exposure of the general population increases through expanded use of ionizing radiations in medical, industrial, and military operations, the problem of mass genetic damage will eventually become of greater importance and permissible dose to the gonads may have to be decreased.

While chromosomes are highly resistant to change in vivo by chemical and most physical agents, they are startlingly sensitive to exposure to ionizing radiations. No dose is too small to disturb chromosome bonds and genetic linkages, as there is no threshold dose.[3] This means that there is no such thing as a tolerance dose for the germ cells, as any dose can produce permanent changes. The quantity of dose affects the mutation rate in a linear fashion. The nuclear structures lack the ability to recover possessed by the extranuclear components of the cell. Consequently the effects of radiation are cumulative, and the sum of numerous small doses occurring over a prolonged period produces the same amount of genetic change as an equivalent amount of radiation in a single exposure. Mutations, whether spontaneously occurring or radiation induced, are almost always

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harmful. Most mutations are recessive and will remain concealed until the cell is fertilized by an identically altered germ cell. As radiation exposure of mass population increases, opportunity for such a union improves. It is clear that radiologists should strive to keep gonadal exposure of patients and personnel to a minimum.[4]

Among measures to be employed is the exercise of discretion on the part of the physician in ordering examinations of the pelvis and abdomen, so that the information gained will warrant the calculated risk of exposure.[5] It must be remembered also, that most examinations of infants constitute total body exposure. Exposures to the chest, skull, and extremities are not involved in this consideration, as they do not carry a significant dose to the gonads.[6]

The protection problem consists of two phases: (1) patient protection and (2) personnel protection. Reducing patient exposure indirectly reduces personnel exposure by limiting scattered radiation. However, the chronic nature of the exposure of radiation workers introduces additional factors for consideration.

PROTECTION OF THE PATIENT

Radiographic Exposure. Reduction in the size of the beam of primary irradiation not only reduces the volume of tissue irradiated but also decreases the amount of secondary radiation. This is accomplished by the constant use of cones which limit the field size to the smallest area compatible with demonstrating the area of interest. In radiographic examinations including the gonadal area, a leaded rubber strip of 0.5 mm lead equivalence should be draped over the pubis in men, and over the lower pelvis in women, provided it does not conflict with the purpose of the examination. This will absorb more than 90 per cent of the radiation produced by a typical radiographic exposure. All parts outside of the field of interest should be protected in infants and young children.[7]

Inasmuch as decrease in radiation intensity is proportional to the square of the distance from the source (that is, it will be one fourth of the amount at 2 feet from the x-ray tube as it is at 1 foot), the maximum practical tube-film distance should be used. This should be no less than 36 inches. The radiation output at tabletop can be reduced to one fourth of its unfiltered value by the addition of 3-mm aluminum filter to the tube head.[8] This can be accomplished without perceptible effect on radiographs in the range of 70 to 100 kv and absolutely should be used on both radiographic and fluoroscopic portals.

Fluoroscopic Exposure. The fluoroscope is a dangerous instrument if improperly used. Few physicians, radiologists among

them, know the roentgen output of their fluoroscopes. These should be calibrated by means of an r-meter with a 0-25 r ionization chamber. Tabletop air dose per minute without backscatter can be determined by placing the chamber in the center of the field with the fluoroscopic shutter closed down to the ordinary field size and making a one-minute exposure with the controls set at the usual fluoroscopic values.

Unless efforts have been made to reduce the exposure, findings may be alarming. Outputs in excess of 100 r per minute are not unusual in fluoroscopic units operated at high milliamperage, short tube-tabletop distance, and no filtration.[9] These can produce a skin erythema and serious epiphyseal and gonadal damage in the course of a single examination.

Reduction of the fluoroscopic output without interference with the brilliance of the image is obtained by the use of a small field no greater than 10 by 10 cm, a screen with a speed equal to that of the Patterson B2, and a fluoroscopic tube-tabletop distance of no less than 18 inches.

Kilovoltage setting should be in the range of 80 to 90, and the milliamperage 3 or less.[10] After about a 15-minute period of dark adaptation, satisfactory visualization can be obtained with settings as low as 1 ma., and because output is almost directly related to milliamperage, the importance of a low setting is apparent.

Using these means, fluoroscopy can be performed with an output as small as 1.5 to 4 r per minute. Units with an output in excess of 10 r per minute should be modified to reduce radiation production.

The period of actual fluoroscopic exposure should be kept to a minimum. The tube should not be activated until the patient is placed in the desired position, all preparations are complete, and the radiologist is psychologically set for a glimpse of a specific structure. With practice, actual fluoroscopic exposure time need not exceed an average of two minutes for an upper gastro-intestinal or barium enema examination. Only the exceptionally difficult case should take as long as five minutes. An automatic timer is an aid in training one in rapid fluoroscopy.

PROTECTION OF PERSONNEL

Radiographic Exposure. Protection of personnel involves consideration of proper installation of equipment and barriers as well as maintenance of proper protection practices.[11] Principles of construction are thoroughly described in the National Bureau of Standards Handbook 20.[12] In brief, the radiographic room should be of adequate dimensions, at least 12 by 12 feet, to reduce backscattering from the walls. This is still an important con-

sideration despite the fact that nowadays dealers in x-ray equipment make a selling point of the small space into which their equipment will fit. The barrier at the control panel should be at least 6 feet from the tube. Protection in the barrier wall is usually calculated for the reduced kilovoltage of secondary radiation, so the primary beam should never be turned toward the control panel. The walls and doors should contain sheet lead 1 mm thick or its equivalent.

Effectiveness of protection by the tube casing should be checked and not assumed, particularly in old units and after introduction of new tube inserts. Radiation should not exceed 0.1 r per hour at a distance of 1 meter. Windows in control panel barriers should be tested originally by film badge or survey meter to verify their protective qualities.

Technicians should be so well versed in protection practices that proper action is automatic. They should be observed while working to see that they stand completely behind the barrier during an x-ray exposure. Frequently, the careless technician will leave part of his body unprotected as he steps back from checking the patient's respiration, or he will stand in a doorway during an exposure.

Under no circumstances should full-time x-ray personnel hold patients during radiography. Even the wearing of leaded gloves and apron does not make this action permissible. If mechanical restraints are not sufficient, nonradiologic personnel should be drafted for this purpose and an effort made to avoid frequent use of the same persons.

Fluoroscopic Exposure. The greatest incidence of radiation exposure occurs during fluoroscopy, and this involves principally the radiologist and, to a lesser degree, his assistants. While the radiologist accepts the idea of wearing a leaded apron, he often neglects to supply them to his aids. It is the radiologist's responsibility to furnish aprons to his assistants and to see that they use them. Aprons and gloves should be scrutinized periodically to detect any break in the protective surface.

The technicians and radiologist should be aware of the location of the potential danger areas in the fluoroscopic room. These are the regions immediately behind the table when it is upright and immediately lateral to the patient both when the table is upright and horizontal. These are the zones of greatest intensity of scattered radiation generated within the patient.[9]

Technicians often stand beside the patient, particularly after giving him a glass of barium or when observing fluoroscopy. They should be instructed to hand the patient the glass and then step back either behind the barrier or the radiologist.

With the table upright, the radiologist should sit well in front of the screen, taking care to keep his feet from beneath it. The fluoroscopic field should be centered to the screen so that the radiation can not sweep around its edges. The fluoroscopist should acquire a chair with a protective front if available.

If the fluoroscopic screen is not equipped with a leaded rubber sheet which hangs between the side of the table and the radiologist when the table is in the horizontal position, a similar sheet, about two by three feet wide, can be mounted on a wooden lathe and be suspended from the ceiling for this purpose. By counterweighting, the sheet can be kept well out of the way when not in use. As an additional protection feature, late model tables often contain a metal strip hinged to the Bucky tray that obliterates the Bucky slot, thus further reducing the quantity of secondary radiation at the fluoroscopist's genital level.

Because the forearm between the glove and shoulder on the side used for palpation is the portion of the fluoroscopist's body receiving the greatest radiation exposure, he should avoid placing his gloved hand in the fluoroscopic field. All palpation should be done with the current off and reliance should be placed upon the pressure cone for demonstration of tissue flexibility and mucosal pattern.

Personnel should be monitored either by carrying a pocket dosimeter or by wearing film badges.[13] Pocket dosimeters easily get out of adjustment and more reliance can be placed on film badges. A rough estimate of exposure can be made with the use of dental film, but an accurate determination is available with the use of step filtered film badges.*[14]

A complete blood count is not satisfactory as a monitoring device, because chronic overexposure could occur before significant changes became evident.[15] It is recommended as part of the pre-employment physical examination of radiation workers for medico-legal reasons and should be repeated semiannually as a means of reassurance.[16]

The prime measure for checking on the efficiency of radiation protection is an annual radiation survey using the survey meter. If such an instrument is not available, services of a radiation physicist should be obtained to perform the investigation. This should be done early in the use of a new installation. Thus, any deficiency can be promptly detected. No area in the department is impermeable to radiation, but the regions of relatively high dosage can be determined. Movement of stations a few feet

*These are now distributed to Air Force personnel by the Air Materiel Command and are obtained by writing to Commander, Air Materiel Command, Attn: MCDPL, Wright-Patterson Air Force Base, Ohio.

may greatly alter the quantity of personnel exposure. An effort should be made to keep the dosage rate below 36 mr per hour (10^{-5} r per second).[17] However, this figure is based on an assumed continuous exposure as might possibly occur in a therapy installation. In view of the extremely short exposure intervals occurring in a diagnostic radiology department, a 100- to 200-fold margin of safety is present at this level.

OBSERVATIONS AT THIS HOSPITAL

The findings on tube calibration and radiation survey of the x-ray department of this hospital in an investigation of 27 June 1955 are shown in tables 1 through 4. Barriers consist of 2 mm of sheet lead on a wooden frame, and are situated 6 feet from the tube stand. All walls contain 2 mm of sheet lead, and all primary beams are filtered by 3 mm of aluminum, except for the urographic unit which contains 2 mm. Dosage is calculated as air dose without backscatter.

TABLE 1. *Radiographic unit KX 19*

Radiation output, primary beam at table top
Fluoroscopic settings (10- by 10-cm field)
83 kv, 1 ma.—1.6 r/min
83 kv, 3 ma.—3.5 r/min
Peak radiographic exposure
130 kv, 200 ma., 0.4 sec, 40-inch distance—1.8 r
Stray radiation survey
Radiologist's position during fluoroscopy, leaded sheet interposed—6.0 mr/hr
During radiography
Behind control barrier—20 mr/hr
Hallway behind leaded wall—1.6 mr/hr

TABLE 2. *Radiographic unit with LRT 1-2 tube*

Radiation output of primary beam at tabletop
Peak radiographic exposure
100 kv, 200 ma., 1 sec, 38-inch focal-film distance—3.0 r
Stray radiation during peak exposure
Behind control barrier—35 mr/hr
Hallway behind leaded wall—4.0 mr/hr

TABLE 3. *Photofluorographic unit*

Radiation output of primary beam at screen surface
Peak radiographic exposure
89 kv, 200 ma., 0.35 sec, 32-inch focal-screen distance—1.8 r
Stray radiation during peak exposure
Behind control barrier—2.0 mr/hr
Adjacent hallway through leaded wall
Anterior to radiographic tube—30 mr/hr
Posterior to radiographic tube—15 mr/hr

TABLE 4. *Cystoscopic room*

Radiation output of primary beam at tabletop
Peak radiographic exposure
100 kv, 100 ma., 1.5 sec, 36-inch focal-film distance—2.8 r
Stray radiation at peak exposure
Control barrier, leaded portion—5.0 mr/hr
Control barrier, defect in lead sheet—150 mr/hr
Hallway by open door—35 mr/hr

SUMMARY

Although the problem of protection from the effects of ionizing radiation has been with us since the world became aware of the injuries suffered by the pioneers in radiology, the focus of concern has shifted from the field of somatic injuries to that of genetic injuries.

This changed perspective has resulted from a lowered incidence of gross overexposure following better understanding of methods of protection; an increase in the number of people subjected to radiation exposure as a result of increased medical, industrial, and military use of x-ray generators and radioactive materials; and the discovery that genetic injuries can be produced by exposure to radiation in amounts well below the so-called maximum tolerance dose.

The concept of the permissible dose includes the acceptance of a limited degree of genetic damage to a limited population so that mankind's genetic stream, though altered, will not be overwhelmed by undesirable traits. The amount of damage that is acceptable is a matter of philosophy. There is no experimental evidence specific to man that would indicate what this dose should be. It is obvious that efforts to reduce gonadal exposure to radiation should be as thorough as practical means will allow.

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HAZARDS TO MAN OF NUCLEAR RADIATIONS

"The inhabitants of this country may receive in the next 50 years, from nuclear weapons already exploded, about 0.02% to 0.04% of the radiation that they will receive during the same period from natural sources. If the firing of bombs were to continue indefinitely at the same rate as over the past few years, there would be a build-up of activity, gradually reaching a plateau in about a hundred years, which would give the average individual a dose over a period of 30 years of about 1% of what he would receive in the same period from natural sources. The individual and genetic effects of such a dose of external radiation would be insignificant."

—Reprinted from *Hazards to Man of Nuclear and Allied Radiations,* H. M. Stationery Office, in *The Lancet* p. 949, June 1956

LIGATION OF THE UMBILICAL CORD

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BLEEDING from a ligated umbilical cord stump in its most severe form poses a serious threat to the life of a newborn infant. In its mildest form, when detected early, it is a nuisance requiring time-consuming religation. The incidence of bleeding from the stump after ligation of the cord with one or two ties of umbilical tape has been reported as occurring in from 4.4 to 10.0 per cent of cases.[1,2] Current textbooks of obstetrics and pediatrics contain only brief reference to this commonly accepted, unsatisfactory method of ligation.[3-6]

Umbilical tape, being an inelastic fabric, fails to maintain sufficient tension on the vessels within the rapidly shrinking cord, and thus bleeding occurs. Although most obstetricians have accepted this fact without protest, some have devised a variety of clamps to solve the problem of cord hemostasis. The first was described in 1922 by Ziegler[7] and was modified in form, but not in principle, in 1936.[8] This latter model of the Ziegler clamp is currently in wide use. Other appliances in this category were described by Kane,[9] Kahn,[10] Pastore,[11] and Fist.[12] Although these clamps were successful in guaranteeing hemostasis, they had the disadvantage of being bulky, cumbersome to apply, injurious to the cord attachment, or costly.

A new approach to this problem was furnished by Kanner[13] in 1939. He suggested ligating the umbilical cord with a standard rubber band. The rubber band was looped around the cord and both ends were brought out through a perforated lead shot. The band was stretched to apply tension to the cord, and the shot was compressed to hold this tension. He reported no delayed bleeding in 1,500 cases. This method was successful because it took into consideration the shrinkage of the cord as Wharton's jelly dried. Save for slight difficulty in applying the band, it lacked the other objectionable features of the clamps described above.

In 1950 Mayes[2] suggested dissection and separate ligation of the umbilical vein and arteries. This represented a new approach, equally successful, to the problem of shrinkage and delayed bleeding. Technical difficulties, admittedly slight, have apparently prevented widespread acceptance of this method.

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A new method reported herein has been in use in this country for the past six years and has met with considerable success. It affords complete hemostasis and has none of the objectionable features of the above-described devices and methods. At present it is used in only a few sections of the United States, but because of its obvious advantages more widespread use is warranted. In 1950 Krakower and Nabolotny[1] reported on its use and credited Silesky, a Ukrainian physician, with devising the method at the Displaced Persons Regional Hospital, Aschaffenburg, Germany. The method was introduced to this country by Doctor Nabolotny.

MATERIALS

The materials required for cord ligation are: (a) three curved Kelly clamps (sterile), (b) one pair sterile scissors, and (c) one section of standard rubber intravenous tubing from 3 to 4 mm long. Discarded intravenous tubing is used, preferably the rubber sections found on blood recipient sets. The tubing is cleansed, cut into segments from 3 to 4 mm long, and stored in 1:1000 aqueous Zephiran (brand of benzalkonium chloride).

METHOD

The following method has been used by the author and differs only slightly from that described by Krakower and Nabolotny.

1. After delivery of the infant the cord is observed until pulsations have ceased. It is then doubly clamped with Kelly clamps and divided between the clamps. The segment of cord attached to the infant should be from 10 to 15 cm in length.

2. Sterile gloves are applied and the rubber band is manually placed on the end of the third Kelly clamp, which at this time is closed. The band is placed 5 mm from the end of the clamp.

3. This clamp is opened and the band stretched. The clamp at the end of the cord is removed and inserted through the rubber band, regrasping the end of the cord. The cord will not bleed during this maneuver (fig. 1).

4. The cord is then drawn through the band so that the band is finally placed from 1 to 1.5 cm from the abdomen. The clamp is then gently teased from within the band.

5. The cord is then recut 1.5 cm distal to the band, and the end of the cord is wiped with an alcohol sponge. Cord dressings are optional and were not used in this series.

Figure 2 shows completed application of the band.

This method has been used in over 600 cases without a single instance of delayed bleeding from the stump. There have been no cord infections that could be traced to this method. On rare

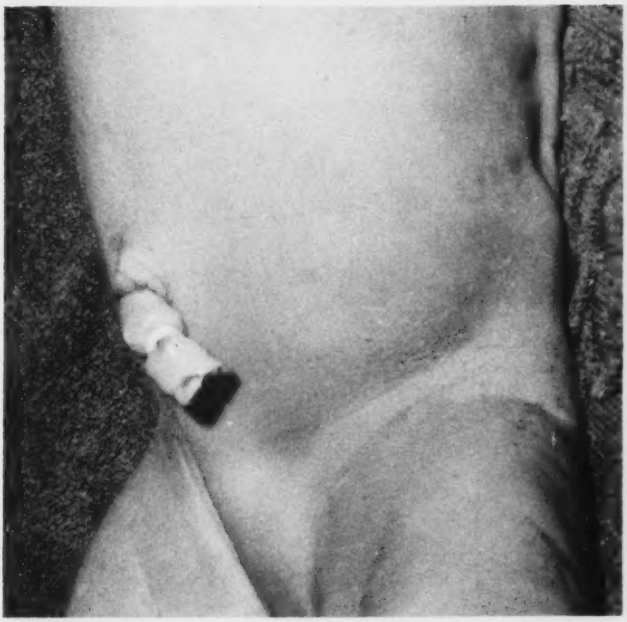

Figure 2. Band ligature in place immediately after application.

Figure 1. Application of band ligature.

occasions a cord may be encountered which is so large that application of the band is impossible. Ligation with umbilical tape and close observation is then indicated.

ADVANTAGES OF METHOD

Krakower and Nabolotny's article listed the following advantages, and their opinions were substantiated by my present series. (a) The method is quick and simple to perform. (b) There is no danger of trauma to the cord or its attachment. (c) The rubber band will not slip or loosen. (d) There is no danger of subsequent bleeding and consequently no necessity for retying. (e) There is no expense associated with this method since the bands are derived from discarded rubber tubing.

SUMMARY

A technic for ligating the umbilical cord is presented which is quick and easy to perform, involves no expense, and eliminates the danger of bleeding from the ligated stump. More widespread adoption of this method is suggested.

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God's interest in the human race is nowhere better evinced than in obstetrics.—Martin T. Fischer

DETERMINATION OF PROTEIN-BOUND IODINE BY THE LEFFLER METHOD

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THE DIFFICULTIES of exact diagnosis of thyroid disease by established methods are well known.[1-4] Although radio-iodine I^{131} is used extensively, there are various reasons why determination of protein-bound iodine still appears to be the method of choice in many obscure thyroid conditions. Very young patients, those who are bedfast, and those who must travel long distances to medical centers may be denied isotope studies. In the determination of protein-bound iodine, a simple venipuncture is made on the fasting patient and the sample may be carried to the laboratory or, if necessary, mailed. There obviously are no radiational hazards to technician or patient, and the cost to the patient is much less than for an isotope study, because the test can be performed by laboratory technicians possessing average chemical knowledge and manual dexterity.

In a previous article[5] the Barker method and its adaptability to military medicine was described. Since that time Leffler[6] has published a much simpler procedure, and the method discussed in this report is essentially a modification of that of Leffler. In describing the technic we have listed necessary apparatus and reagents, making use of only the more commonly available laboratory equipment, in order to simplify the procedure for smaller laboratories. Round-bottom, 40-ml centrifuge tubes are used rather than Leffler's flat-bottom tubes, because the latter are costly and difficult to obtain. Substituting round-bottom centrifuge tubes allows use of a standard centrifuge head, obviating the need for special-size trunnion carriers and rings. The rack employed to support the digestion tubes can be fabricated by the technologist from a wire basket and wooden applicator blades. A small standard hot plate is used, rather than a special, large unit not commonly available in small hospital laboratories. Another significant modification is the separate storing of arsenious acid and sodium chloride solutions. If either reagent should

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become contaminated, valuable time is not lost in redoing all titrations. Only one titration is necessary if contamination should occur. In this fashion sensitivity can more easily be adjusted.

Previously reported[5] determinations of protein-bound iodine indicated that such determinations were less valuable in the study of hypothyroidism than in hyperthyroidism. Using the Leffler method, however, we found that the results in hypothyroid conditions are reproducible and valid. Also, for euthyroid persons we did not find the very low normal or subnormal values previously reported. Our normal values are 4.0 to 8.0 μg per 100 ml.

Leffler listed the drugs and medications that interfere with the test: iodine in any form, mercurial diuretics, corticotropin (ACTH) and cortisone, bromides, thiouracil, thiocyanate, sulfonamides, thyroid, and thyroxin. To this list should be added solutions of radioiodine, radiopaque mediums such as Diodrast (brand of iodopyracet), and barium given for gastro-intestinal x-ray studies. The injectable opaque medium contains iodine which is slowly absorbed over a long period of time and will cause an abnormally high value. The barium also contains a small amount of iodine which is rapidly absorbed and causes a similar disturbance. Patients should have blood drawn for determination of protein-bound iodine before undergoing x-ray studies.

The technician performing the test does not have to be isolated from the chemical laboratory. We have found that a section of a hospital clinical laboratory is sufficient provided that iodine-containing chemicals are not used or stored in the immediate area. Ten to 15 samples may be done at the same time. About five hours are required for completion of the test.

The principle of the determination is the catalytic action of iodine on the reduction of colored ceric ion by arsenious acid. O'Neal and Simms[7] gave credit to Chaney for first applying the reaction to biologic materials in 1940.

The six stages in the determination of protein-bound iodine are as follows:

1. *Precipitation of protein.* One milliliter of clear serum is precipitated with 10 ml of 15 per cent trichloroacetic acid.

2. *Washing of protein precipitate.* After initial centrifugation the supernatant trichloroacetic acid is decanted and an additional 10 ml of 15 per cent trichloroacetic acid is used to remove any remaining serum-soluble iodine.

3. *Digestion of protein precipitate.* Ten milliliters of chloric acid reagent is added to the drained protein precipitate. Also added is 1 ml of sodium chromate solution as an indicator. The

mixture in the tubes is digested on an electric hot plate until the volume is reduced to approximately 1 ml and the chromate is oxidized to chromium trioxide.

4. *Reconstitution of digest.* After the formation of the red chromium trioxide the tubes are removed from the hot plate and allowed to cool. Iodine-free water is added to a 10-ml volume and the solution is thoroughly mixed.

5. *Colorimetric determination of iodine.* The ceric sulfate-arsenious acid reaction is applied to the iodine-containing digests, and the catalytic effect of the iodine on the colorimetric reaction is measured during a timed interval.

6. *Plotting of results.* The standard values are plotted on semi-logarithmic paper, and unknown values, in terms of micrograms of iodine per 100 ml of blood, are taken from the resulting graph.

EQUIPMENT

1. 40-ml round-bottom centrifuge tubes graduated at 10 ml, with one glass bead and a stirring rod in each tube
2. Glass beads
3. 3-mm glass stirring rods
4. Variable temperature electric hot plate
5. Fume hood
6. Pipets:
   a. 0.5-ml Ostwald
   b. 1.0-ml Ostwald
   c. 2.0-ml Ostwald
   d. 3.0-ml volumetric
   e. 5.0-ml volumetric
   f. 10.0-ml volumetric
   g. 10.0-ml serologic
7. Volumetric flasks:
   a. 50 ml
   b. 250 ml
   c. 500 ml
   d. 1,000 ml
8. Centrifuge, size 1 or 2, with any head capable of carrying 50-ml shields and rings
9. Assorted large beakers and small flasks
10. Rack or basket capable of holding digestion tubes on the hot plate
11. Spectrophotometer with a 420-mμ wave length and cuvettes free from scratches
12. Constant-temperature water bath

PREPARATION OF REAGENTS

All pipets and glassware must be chemically cleaned with dichromate-sulfuric acid solution just prior to use to prevent air-

borne iodine contamination. Rinse thoroughly with hot tap water and then with distilled water. Dry rapidly in a hot-air oven. If any doubt of the quality of the distilled water exists, it is advisable to redistill the water through a glass still with ground glass connections. All reagents must be made from the highest quality chemicals obtainable.

Trichloroacetic acid (15 per cent). Dissolve 75 grams of best reagent grade trichloroacetic acid in distilled water to 500 ml in a volumetric flask. Store at room temperature in a pyrex reagent bottle with ground glass stopper.

Sodium chromate (0.5 per cent). Dissolve 2.5 grams of sodium chromate in distilled water to 500 ml in a volumetric flask. Store at room temperature in a pyrex reagent bottle.

Potassium iodate. (a) Stock standard (100 gamma per ml). Dissolve 168.5 mg of potassium iodate in distilled water to a volume of 1,000 ml. The potassium iodate should be dried over calcium chloride in a desiccator for 48 hours before being weighed. *(b) Working standard iodate (0.1 gamma per ml).* Dilute 0.5 ml of the stock standard to 500 ml in a volumetric flask. This working standard should be freshly prepared each time the tests are performed.

Chloric acid reagent (approximately 28 per cent). This procedure must be followed exactly! Place 200 grams of crystalline potassium chlorate (Mallinckrodt, analytical reagent) in a chemically cleaned 1,000-ml beaker. Add 360 ml of distilled water and place on an electric hot plate. Heat until dissolved (approximately 30 minutes) with occasional stirring. When solution is complete (the solution will assume a syrupy consistency and will be slightly cloudy), remove from the hot plate and immediately begin addition of 166 ml of 70 per cent perchloric acid, constantly stirring. A slow drip of the perchloric acid is necessary to prevent spattering.

When the addition of the perchloric acid is complete the resulting chloric acid supernatant will be light green in color due to liberated chlorine. Cover the beaker with large filter paper and allow to cool at room temperature for from 15 to 30 minutes, then place the covered beaker in the refrigerator overnight. While the chloric acid is still cold, filter into a 500-ml pyrex reagent bottle through Whatman No. 40 paper. The potassium perchlorate precipitate is *immediately* washed down the drain with large quantities of hot water. An explosion may result if the precipitate is allowed to stand and reach room temperature or dry out. The yield obtained is approximately 300 ml. Store at room temperature in a dark place. The reagent will rapidly lose the green coloration and become completely clear.

Stock ceric sulfate. Place 65 grams of anhydrous ceric sulfate* in a 1,000-ml beaker. Add 60 ml of concentrated sulfuric acid. Mix and add slowly, with constant stirring, 50 ml of distilled water. Heat at just below the boiling point for 30 minutes. Allow to cool to room temperature, and, while stirring, add distilled water to a volume of about 700 ml. Filter through Whatman No. 40 paper into a pyrex reagent bottle. The working solutions of ceric sulfate are described below.

Arsenious acid (0.2 normal). Place 9.89 grams of arsenic trioxide in a 600-ml beaker. Add 70 ml of 10 per cent sodium hydroxide and stir until completely dissolved. Add distilled water to approximately a volume of 400 ml and 5 drops of 0.5 per cent alcoholic solution of phenolphthalein. Slowly add concentrated sulfuric acid until the solution becomes colorless. Add 45 ml of sulfuric acid in excess. Cover beaker and allow to cool. Quantitatively transfer to a 1,000-ml volumetric flask and make up to volume with distilled water. The solution is stored in a pyrex reagent bottle at room temperature.

Sodium chloride (2 per cent). Dissolve 5 grams of the highest quality sodium chloride (Mallinckrodt, analytical reagent) in distilled water and bring to 250 ml in a volumetric flask. The volume of sodium chloride solution to be used in the test is given below.

TITRATION OF REAGENTS

Ceric sulfate working solution. Prepare 5 chemically cleaned test tubes. Into the first tube pipet 3.0 ml of 2 normal sulfuric acid (60 ml sulfuric acid per liter of water) and 2 ml of acid into the 4 remaining tubes. To the first tube add 1.0 ml stock ceric sulfate; mix and make serial dilutions using a 2-ml Ostwald pipet. This gives dilutions from 1:4 to 1:64. Into 5 cuvettes pipet 5.0 ml of 2 normal sulfuric acid and add 1.0 ml of the respective dilutions of ceric sulfate. Read at 420 mμ against distilled water as a blank. Select the dilution that keeps the readings in the most accurate portion of the scale. Once the dilution is determined it is employed in all further titrations and tests.

Suitability of reagents in combination for the colorimetric reaction. Into a series of 3 cuvettes pipet the reagents shown in table 1. Mix by gentle lateral shaking and take transmittance readings immediately and at 10, 20, and 30 minutes. The tubes labeled 1 and 2 are read at room temperature at 420 mμ against tube 3, the water blank. A loss of 2 per cent in transmittance is acceptable. Equal loss of color in tubes 1 and 2 shows contamination in the ceric solution. Greater loss of color in tube 1 would indicate contamination of the arsenious acid. A moderately greater loss of color in tube 2 shows water contamination. Example readings are shown in table 1.

*G. Frederick Smith Chemical Co., Columbus, Ohio.

TABLE 1.

Reagents	Tube 1	Tube 2	Tube 3
	ml	ml	ml
Arsenious acid	2	1	0
Distilled water	3	4	6
Ceric sulfate, working solution	1	1	0
Per cent transmission readings	**Tube 1**	**Tube 2**	**Tube 3**
Immediate	21	21	100
10 minutes	22	22	100
20 minutes	22	22	100
30 minutes	23	23	100

Titration of sodium chloride solution. Since all sodium chloride contains traces of iodine the amount present must be titrated. Four cuvettes are employed. Table 2 lists the quantities of reagents in the titration and examples of spectrophotometric readings.

TABLE 2. *Sodium chloride titration*

Tube number mg NaCl	1 10	2 20	3 40	4 60
	ml	ml	ml	ml
Sodium chloride solution	0.5	1	2	3
Arsenious acid	2	2	2	2
Distilled water	2.5	2	1	0
Ceric sulfate, working solution	1	1	1	1
Per cent transmission readings	**Tube 1**	**Tube 2**	**Tube 3**	**Tube 4**
Immediate	21	21	21	21
10 minutes	23	27	29	32
20 minutes	24	32	37	39
30 minutes	26	36	47	47

A variation of not over 6 per cent transmission between the immediate and 30-minute readings is allowable. The table indicates that for this particular lot of sodium chloride 10 mg is the optional amount to be used in the determination. This titration must be performed each time a new solution in the colorimetric determination is prepared. Each tube in the following determination will receive 2.0 ml of arsenious acid-sodium chloride reagent. This reagent is prepared by mixing 2.0 ml of arsenious

acid and 0.5 ml of the titrated 2 per cent sodium chloride just prior to use.

METHOD

Pipet 1.0 ml of serum into the digestion tube and add 10 ml of 15 per cent trichloroacetic acid. Mix by gentle rotation and centrifuge at moderate speed (2,000 r.p.m.) for 10 to 15 minutes to pack the protein precipitate. Decant and discard the supernatant. Wash the precipitate with an additional 10 ml of 15 per cent trichloroacetic acid and recentrifuge to pack the precipitate thoroughly. Decant the supernatant and allow the tube to drain, inverted on a piece of filter paper, while preparing the standards.

Select 4 digestion tubes and label them from 1 to 4. The first tube (blank) is left empty. Pipet 0.5 ml of the working standard into the second, 1.0 ml into the third, and 1.5 ml into the fourth. These contain the equivalent of 5, 10, and 15 μg of iodine per 100 ml of serum.

Into each of the digestion tubes—unknown, standards, and blank—pipet 1.0 ml of 0.5 per cent sodium chromate solution, then 10 ml of chloric acid reagent. Place a glass stirring rod and single glass bead in each tube. Stir the protein precipitate to break it up as finely as possible and leave the stirring rod in each tube. Place all the tubes in the series on the hot plate at low temperature. As a test for the proper temperature, place a strip of bond writing paper on the hot plate; in 30 minutes a slight browning, but no charring, should occur. Close the fume hood and allow the tubes to boil slowly. Care should be taken that the boiling is not too vigorous or that bumping does not occur. Once the temperature is properly adjusted the tubes require no attention for nearly 2 hours. As the volume decreases to approximately 2 ml, constant supervision becomes necessary. The end point of digestion is the formation of a very fine red precipitate of chromium trioxide which appears on the edges of the tube just at the junction with the remaining solution. Preceding the red precipitate formation, moderately dense white fumes will be given off. At the first appearance of the red precipitate the tube is removed from the hot plate and allowed to cool to room temperature inside the fume hood. As the tubes cool the precipitate will become much heavier, leaving a nearly colorless supernatant. If at any time after the first half hour of digestion the yellow chromate color turns to the green of chromium chloride the determination is invalid, as iodine has been lost. After the tubes have cooled add distilled water to the 10-ml graduation. The red precipitate will dissolve and the yellow chromate color will return. Stir the digest thoroughly and allow the tubes to stand for a few moments for the fine granular precipitate to settle.

The iodine content of the digest is determined as follows: In a series of 5 cuvettes place 3 ml of the respective digests. Pipet 6 to 10 ml of distilled water to an unlabeled cuvette; this will be used to set the spectrophotometer at 100 per cent transmission. To each of the numbered cuvettes add 2.0 ml of the arsenious acid-sodium chloride reagent. (The reagent is prepared just prior to use, according to the titration. For example: 2 unknowns, 3 standards, and 1 blank require 12 ml of the reagent. The foregoing titration determined that 10 mg of sodium chloride is required, so one adds 3.0 ml of the 2 per cent sodium chloride solution to 12 ml of the arsenious acid reagent.) The yellow color of the chromate is immediately lost. Mix tubes by gentle lateral rotation and place in a stable water bath at 28°C for 15 minutes. At 30-second intervals, timed with a stop watch, add 1.0 ml of the ceric sulfate working solution to each. Mix with gentle lateral rotation and immediately replace the tube in the water bath. At exactly 10 minutes from the addition of the ceric sulfate to the first tube, start reading the per cent transmittance at 420 mμ at 30-second intervals in the same order as the ceric sulfate was added. The spectrophotometer is set at 100 per cent

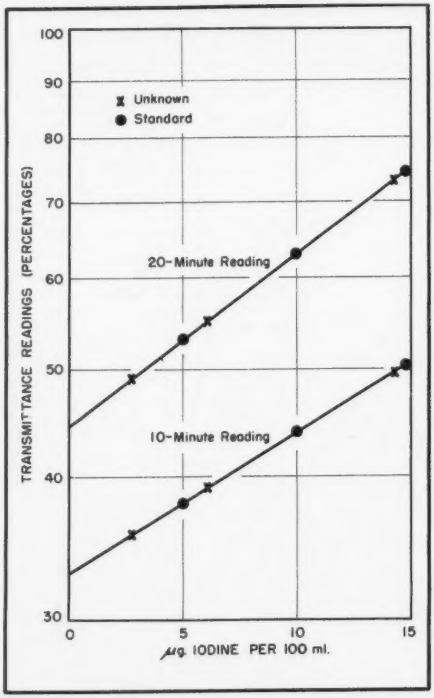

Figure 1. Graph for determining values for protein-bound iodine.

transmittance with the unlabeled cuvette of water as the blank. Record the results. The tubes are immediately replaced in the water bath and a reading is taken again at 20 minutes.

The 10- and 20-minute readings are plotted on semi-logarithmic paper with the concentration of iodine on the abscissa. The resultant standard readings should give nearly a straight line, off which are taken the unknown values. Figure 1 shows typical results.

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CHOLESTEROL IN THE ORIENT

Pathologists are still speculating about the possibility that the low blood cholesterol of the Orientals might be a genetic characteristic, like the low weight of adrenals and gonads and the scanty hair growth. Forty years ago, however, Dutch clinicians had already shown that the low-blood cholesterol of the Indonesian is not a racial characteristic. Careful investigation revealed that the blood cholesterol of Javanese serving as well-fed waiters on the luxury ships plying between the Netherlands and the Indies reached levels comparable to the average figures found in the Occident.

—I. SNAPPER, M. D.
in *Annals of the New York Academy of Sciences*
p. 92, July 15, 1955

EFFECT OF ACTH ON ACUTE EPIDIDYMITIS

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CORTICOSTEROIDS have been used beneficially in selected cases in the treatment of such infectious diseases as tuberculosis, acute rheumatic fever, typhoid fever, brucellosis, rickettsioses, trichinosis, viral hepatitis, mumps orchitis, infectious mononucleosis, and chancroid.[1,2] Florence[3] recently reported an impression that cortisone used in treating five patients with acute epididymitis decreased pain and morbidity and promoted earlier healing. Corticosteroids or corticotropin (ACTH) apparently is not used generally in the treatment of this condition, although trial of such agents in the treatment of the condition appears indicated from theoretic and practical viewpoints.

After the pronounced effect of ACTH on certain features of chancroid was shown by one of us (Tyler),[2] it appeared reasonable that a hyperimmune response on the part of the host also might be responsible for some of the erythema, edema, and destruction of tissue in acute epididymitis. A hyperimmune reaction in this condition is suggested by the appearance of great inflammation and particularly the deep erythema of the overlying scrotum. The frequently observed poor response of this condition to antibiotics might be caused at times by a hyperimmune response. It is also noteworthy that rest in bed and the application of ice bags may give relief in this condition as well as in other diseases probably associated with an excessive host response.[2,4]

Acute epididymitis is a condition that could be greatly benefited by decreasing any destruction of tissue and formation of scars resulting from an excessive host reaction. If the tubules of the epididymis could be spared this damage, a better chance for later passage of sperm through them might result. With the possibility of decreasing the destruction of tissue resulting from excessive host reaction as well as making the patient more comfortable, the effect of ACTH in the treatment of acute epididymitis has been studied in three patients.

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CASE REPORTS

Case 1. A 21-year-old white man was seen on 4 June 1953 with a painful right gonadal mass of 36 hours' duration without urinary symptoms. Examination revealed an exquisitely tender right testis and epididymis that were together three to four times the normal size; the shape of the enlargement was typical of acute epididymitis. The right side of the scrotum was moderately red.

Although the patient was put to rest in bed during the first 28 hours of treatment, his condition became slightly worse. A total of 80 mg of ACTH was then given intravenously in 1,000 ml of a 5 per cent solution of dextrose in water during 3 hours and ice bags were applied to the genitalia. The pain and tenderness were notably decreased 2 hours later. Doses of 40 mg of ACTH were given in a similar manner the next morning and again the next afternoon. That evening the scrotum was less red and the testis and epididymis were much less tender. Gradual improvement occurred for the next five days, at which time the mass was still slightly tender and approximately three times the size of the left testis. Another dose of 40 mg of ACTH was given as before, and on the following morning the gonad was nontender and was softer and smaller than it had been on the previous day. The patient was then given 1 gram of Aureomycin (brand of chlortetracycline hydrochloride) four times daily for four days.

Seventeen days after the onset, the epididymis apparently was normal and the patient was returned to duty. The right testis remained one and a half times the size of the left but was normal in consistency and tenderness. The same conditions prevailed two months later.

Case 2. A 33-year-old white man was seen on 12 June 1953, because of pain in the left testis of four hours' duration and frequency and urgency of urination for two or three days. At this time, the only finding was moderate tenderness in the epididymis. Administration of 500 mg of Terraymcin (brand of oxytetracycline) four times daily, was started. The epididymis was enlarged the next day to the size of the testis and was irregular in shape and extremely tender. The dose of terramycin was increased to 1 gram four times daily, and rest in bed was instituted. The following afternoon, 40 mg of ACTH was given slowly as an intravenous drip. Seven hours after this infusion was started, the condition of the epididymis was greatly improved; it was estimated by the patient to be only half as tender as it was at the start of the infusion.

Gradual improvement took place during the next five days. Because the epididymis was still enlarged and slightly tender, the patient was transferred to a service hospital and further follow-up was not possible.

Case 3. A 35-year-old white man was seen on 1 March 1954, with a painful scrotal swelling of three days' duration, associated with fever and malaise. Two hundred and forty mg (400,000 units) of penicillin and 0.5 gram of dihydrostreptomycin were given twice daily. After 2

days with no improvement, the patient was hospitalized. Examination at this time revealed exquisite tenderness of the testis and epididymis, with enlargement to four to five times normal size and deep erythema of the overlying scrotum. Two days of rest in bed, further administration of penicillin and dihydrostreptomycin, and local application of ice bags resulted in no essential change, the patient remaining febrile.

The next day, which was 6 March, the temperature was 100.4 °F at 0800 hours and the tender gonadal mass appeared essentially the same as at admission. Twenty units of ACTH gel was administered intramuscularly at 1000 hours. Five hours later, the patient was comfortable for the first time since his admission and his temperature was normal. ACTH was given in a similar manner twice daily for a total of two days. The mass decreased progressively in size after the first injection and the patient was able to return to work on March 8.

SUMMARY

Administration of ACTH in three patients with acute epididymitis caused a decrease in local tenderness, swelling, and erythema. Such treatment probably increases the possibility of maintaining tubular patency by decreasing local destruction of tissue and fibrosis. Because ACTH decreases the patient's discomfort and probably lowers his chance of becoming sterile, further trial of this steroid in the treatment of patients with acute epididymitis is indicated. It is probably advisable to use the preferred antibiotics in conjunction with ACTH in the treatment of this disease.

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"Treatment of functional gastrointestinal disturbances rests fundamentally on the art of medicine in the treatment of the patient and not on the science of medicine in the treatment of the disease."

—D. L. WILBUR, M. D.
in *The Journal of the American Medical Association*, p. 854, June 30, 1956

VARIABILITY OF PSYCHIATRIC DIAGNOSES

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PREVIOUS to World War II, the emphasis in psychiatry was primarily on diagnostic differentiation. Recent interest has been focused more on dynamic understanding, psychotherapy, and lately, chemotherapy. In many clinical settings, however, a considerable amount of time and effort is still expended on diagnostic evaluation and classification. This is especially true in military psychiatry where large numbers of patients must be evaluated quickly and transferred to other facilities for more extensive treatment or disposition, as well as in many civilian clinics and hospitals where patient needs far exceed available staff time and brief diagnostic studies frequently are all that can be offered.

In re-evaluating admissions to the large psychiatric service of this hospital, the question of reliability of the diagnoses arose in view of the contradictory nature of successive psychiatric diagnoses assigned to a given patient. In determining the amount or type of therapy indicated, frequent and often excessive concern about a statistical rather than a clinical type of diagnosis was observed, as was the undue reliance frequently placed on the diagnostic label rather than on the patient's individual history and personality resources.

STATISTICAL DATA

This study is based on 804 Navy and Marine Corps patients who represented all admissions with a psychiatric diagnosis to the neuropsychiatric service of this hospital during the 10-month period from 1 May 1954 to 1 March 1955. Not included were patients with neurologic diagnoses only.

Two hundred and sixty-four patients (32.8 per cent) were either directly admitted to this hospital or were transferred here from another nonpsychiatric facility (table 1). The remaining 540 (67.2 per cent) previously had been admitted to or evaluated by other medical facilities staffed by qualified psychiatrists, in the course of their present psychiatric illness and before transfer to this hospital. On admission to the sick list, a tentative diagnosis or diagnostic impression may be recorded, *e. g.*, diagnosis undetermined (anxiety reaction); or an established diagnosis may be made (*Joint Armed Services Nomenclature and Method of Re-*

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cording Psychiatric Conditions, Washington, D. C., June 1944). These diagnoses may be changed any time during the course of hospitalization. We are particularly interested here in these changes and the reasons for them.

TABLE 1. *Source of psychiatric patients*

Patients	Per cent	Number
Admitted from other psychiatric facilities		540
One psychiatric diagnosis	36	194
More than one psychiatric diagnosis	65	346
Admitted direct*		264
One psychiatric diagnosis	53	140
More than one psychiatric diagnosis	47	124

*Not from or via a medical facility with qualified psychiatric staff.

Of the 804 patients studied, 470 (58.5 per cent) received more than one psychiatric diagnosis during the present illness; only 149 of these represent cases in which the subsequent diagnosis was changed from an initially uncertain or tentative diagnostic impression. In the remaining 321 cases, the diagnosis appeared definite enough initially to be recorded as established, suggesting clinical certainty. Actually, of the 1,012 psychiatric diagnoses given to this group of 470 patients, only 151 were recorded as tentative. Sixteen patients, during their "single" illness, received diagnoses from all three categories—psychosis, neurosis, and personality disorder.

From table 1, it is observed that patients who were seen at only one psychiatric facility, and so presumably by fewer psychiatrists, are more likely to retain a single diagnosis.

In further evaluating the 470 patients whose psychiatric diagnoses were changed during the course of their illness, it was found that the diagnosis in 38 patients was changed from a tentative diagnostic impression to a different established diagnosis but one within the same area of disturbance, for example, from DU (manic-depressive reaction) to schizophrenic reaction, paranoid type—both psychotic disorders. The diagnosis in 124 patients was changed from an impression in one area to an established diagnosis in another area, *e. g.,* DU (manic-depressive reaction) to anxiety reaction. Seventy were changed from established diagnoses to different established diagnoses but in the same area, such as manic-depressive reaction to schizophrenic reaction, paranoid type. Two hundred and fifty-one were changed from established diagnoses in one area to established diagnoses in another area, *e. g.,* manic-depressive reaction to anxiety reaction.

The same inconsistency in psychiatric diagnosis is found in the patients studied who, within the previous 2 years, had received psychiatric diagnoses from either military or civilian facilities. Of the 334 patients with only 1 psychiatric diagnosis in their present illness, 60 had previous psychiatric contacts recorded; 43 of these contacts occurred within the 2 years preceding the present hospitalization, and the previous diagnosis was known. Of these 43 patients, 26 (60.5 per cent) had received a different psychiatric diagnosis on that previous occasion, and 17 received the same diagnosis as in this hospitalization. Seventy-seven of the 470 patients with multiple psychiatric diagnoses had been seen previously for psychiatric reasons; 57 who had been seen within the previous 2 years received a psychiatric diagnosis which was known; of these, 32 (56.1 per cent) had been given a different diagnosis before, and 25 the same as in this admission.

It was thought there might be certain logical patterns of change in the clinical course of these patients' illnesses that would be reflected in diagnostic changes. For instance, severe, acute anxiety and paniclike reactions might initially appear to be of psychotic proportion, only to resolve later into a more typical neurotic pattern after the patient was removed from the emotionally traumatic situation; or patients being evacuated from forward areas might be diagnosed as more severely disturbed than was warranted, perhaps to justify, either clinically or administratively, their prompt transfer by air. Such patterns were not statistically prominent (table 2). From this table it is seen that a change from a diagnosis of one neurosis to that of another is least common (1.9 per cent). Changes from a diagnosis of psychosis or character disorder to that of neurosis are also infrequent, totaling only 12.4 per cent of all diagnostic changes. On the other hand, diagnostic changes from one psychosis to another or from a psychosis to a character disorder are most prevalent, and together represent nearly one third of all changes, suggesting that either our concept of the psychosis is less well defined or the illness as observed in this group is of a more transient nature than are the neuroses. Changes of diagnosis between psychosis and character disorder comprise 26.1 per cent of the total and may indicate a relationship between the two categories or reflect particular diagnostic uncertainty in these groups.

Diagnostic differentiation by age groups is shown in table 3. In age differentiation it is noted that while the proportion of psychoses remains essentially unchanged, there are many more neurotic illnesses in the older group and a correspondingly high incidence of character disorders in the young, recently enlisted group. It might be anticipated that long-standing personality disorders would become apparent during the first few years of serv-

ice, while neuroses—often due to service experiences themselves—would appear later.

TABLE 2. *Patterns of diagnostic change*

Group	Initial impression or diagnosis of	Changed to	Number	Per cent
A	Neurosis	Character disorder	68	11.6
B	Neurosis	Psychosis	63	10.9
C	Neurosis	Another neurosis	11	1.9
D	Psychosis	Character disorder	82	14.0
E	Psychosis	Neurosis	39	6.6
F	Psychosis	Another psychosis	94	16.0
G	Character disorder	Neurosis	34	5.8
H	Character disorder	Psychosis	71	12.1
I	Character disorder	Another character disorder	52	8.9
J	Situational maladjustment	Other psychiatric diagnoses	24	4.0
K	Other psychiatric diagnoses	Acute situational maladjustment	37	6.3
L	Changes involving nonpsychotic disorders with demonstrable physical causes	Other psychiatric diagnoses	11	1.9
Total			586	100.0

TABLE 3. *Diagnostic distribution by age groups*

Final diagnostic group	Age of patients (years)	
	17 through 24	25 and over
Psychotic	179	83
Neurotic	81	107
Character disorder	237	37
Acute situational maladjustment	16	35
Total	513	262

The distribution of final diagnoses, shown in table 4, is of interest. In this table it can be seen that the most common final diagnosis is schizophrenic reaction, not elsewhere classified (n. e. c.), which accounts for 15.4 per cent of all of the final diagnoses and almost half (46.4 per cent) of the diagnoses of psychosis. Thus, after lengthy observation and evaluation, the final diagnosis in this large group of cases did not fit a clearly de-

TABLE 4. *Final diagnoses*

Diagnoses	Number of patients	Total
Psychotic disorders		265
Schizophrenic reaction, n. e. c. (3007)	123*	
Schizophrenic reaction, paranoid type (3003)	71*	
Schizophrenic reaction, catatonic type (3002)	22*	
Manic-depressive reaction (3010)	15*	
Schizophrenic reaction, latent (3005)	8	
Psychotic depressive reaction (3011)	8	
Schizophrenic reaction, simple type (3000)	7	
Psychotic disorders with physical etiology (3040)	5	
Involutional melancholia (3012)	2	
Schizophrenic reaction, hebephrenic type (3001)	2	
Paranoid state (3016)	2	
Nonpsychotic disorders with physical causes (3041)	2	2
Psychoneurotic disorders		204
Anxiety reaction (3100)	93*	
Neurotic depressive reaction (3140)	55*	
Somatization reactions	22*	
Dissociative reaction (3110)	19*	
Conversion reaction (3112)	9	
Obsessive compulsive reaction (3130)	4	
Phobic reaction (3120)	1	
Hypochondriacal reaction (3180)	1	
Character and behavior patterns		274
Emotional instability reaction (3210)	76*	
Schizoid personality (3200)	64*	
Inadequate personality (3203)	32*	
Passive dependency reaction (3211)	32*	
Passive aggressive reaction (3212)	24*	
Aggressive reaction (3213)	13	
Paranoid personality (3201)	8	
Immaturity with symptomatic habit reaction (3215)	8	
Alcoholism (3221)	6	
Antisocial personality (3204)	4	
Cyclothymic personality (3202)	3	
Primary childhood behavior reaction (3240)	3	
Asocial personality (3205)	1	
Acute situational maladjustment (3274)	50*	50
Mental deficiency (primary) (3250)	2	2
Total		797

*The 14 diagnostic categories accounting for 88 per cent of all the cases.

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fined category. Fourteen diagnostic categories account for 88 per cent of all cases. Some diagnoses were not used at all in this group of patients, although they undoubtedly serve a useful purpose under other circumstances.

DISCUSSION

Psychiatric diagnoses are undoubtedly influenced by factors other than the patients' clinical picture, such as the medical officer's training and experience with psychiatric illnesses, his attitudes and personal needs in relation to psychiatric patients and specific psychiatric disorders, and, not least, administrative demands. These factors deserve consideration in view of the amount of time and effort which is still being expended to establish diagnoses which often confuse rather than clarify the clinical picture.

An initial, "established" diagnosis may be made by a person psychiatrically inexperienced or unqualified. This diagnosis becomes a part of the patient's health record and accompanies him throughout his hospitalization. When transferred to a different medical facility, his record is often given more weight than his clinical picture, at least until sufficient time has elapsed for the staff to become well acquainted with the patient, re-evaluate him, and then perhaps change his diagnosis. Strong reluctance to change a diagnosis was often encountered on the basis that the patient was "entitled" to his most severe psychiatric diagnosis for the purpose of evaluating suitability for return to duty or disability rating. At times, extensive clinical contact, social service investigation, and psychologic evaluation were required to confirm or disprove a diagnosis previously established with inadequate clinical substantiation.

Situational or administrative demands may lead to a more severe diagnosis than the patient's clinical condition actually warrants in order to emphasize a need for prompt evacuation from a forward area. Although in such cases the diagnosis serves its administrative purpose, it may subsequently have an adverse effect on the patient's psychiatric management. This is more likely to occur in psychiatry where diagnostic labels carry strong, popular connotations—for example, an insecure, anxious, neurotic patient receiving an initial diagnosis or even impression of schizophrenia would probably be treated as psychotic until subsequently re-evaluated. In the meantime, he might well be transferred in restraints and confined to a locked psychiatric ward where the staff attitude of detached indifference to his requests, such as is too often shown psychotic patients, would not only fail to meet his emotional needs but might increase his anxiety manyfold.

At times, the doctor's diagnostic ability assumes a "magical" quality, and nurses and corps staff are not readily inclined to

differ diagnostically even though their own contacts with a patient suggest that he is not as disturbed as his diagnosis indicates. It has been observed here that the diagnosis influences, to a certain extent, the patient's clinical behavior. When some patients are diagnosed as psychotic, this provides them with tacit permission to lose control and act psychotic. A psychotic diagnosis leads to closer confinement, less ego control is expected of the patient, and so less conformity is demanded of him by the staff, often by his family, and, therefore, by himself. On the other hand, a disturbed patient who is given increased freedom and individual responsibility is very often seen to meet this with improved behavioral control and decreased "sick" behavior—often shortening his period of hospitalization.

The patient almost invariably learns his diagnosis and, again, is frequently upset about it because of popular concepts of various psychiatric disturbances. He commonly reads up on his illness when books are available, or communicates his psychiatric label to his family, who become emotionally upset—more over the connotations and implications of the psychiatric diagnosis than over the patient's actual condition. Such anxiety at home is usually conveyed back to the patient, contributing noticeably to his feelings of guilt, failure, and inadequacy about being disabled with an emotional illness.

In addition to differences of diagnostic opinion because of varied backgrounds and training, physicians cannot help but reflect their own feelings and biases through the diagnoses they make in a field such as psychiatry where objective findings are more difficult to determine. For example, one who is enthusiastic about the treatment of schizophrenia may unconsciously be too liberal in his use of this diagnosis. His confidence in his therapeutic success will then be strengthened by the cures he effects. On the other hand, marked pessimism about the prognosis of a particular diagnostic entity may lead to reluctance to place any patient in that category. Some patients may earn a particularly harsh or punitive diagnosis by arousing strong negative countertransference feelings in the physician by an uncooperatively defiant, belligerent, or aggressive attitude.

The diagnostic nomenclature used at present reflects essentially the primary ego defense structure used by the patient—a pattern which is abnormal and identifiable. As this attempt to deal with reality is not adequate, the symptomatic pattern is not static or fixed, especially in the acute phase of the emotional disturbance. Instead, we may find the patient handling his feelings in many different ways with varied clinical pictures and diagnoses resulting, depending on when the diagnostic evaluation was carried out. It should be noted that although the psychiatric diagnoses were often at wide variance, recommendations for treat-

ment or discharge from the service were in much better agreement throughout successive psychiatric evaluations.

From the impressions gained in this study the possibility occurred that a less specific diagnostic classification system might serve to expedite and clarify the clinical care of psychiatric patients, in civilian as well as in military situations, where large numbers of patients are seen by different physicians and a brief evaluation is required preparatory to intensive therapy or evaluation elsewhere. It was considered that a classification initially concerned more with tentative clinical features—*i. e.*, the degree of emotional disturbance, whether mild, moderate, or severe; acuteness or chronicity of the illness; and self-destructive or aggressive tendencies—would be of primary value and allow wider flexibility in the subsequent clinical handling of the patient. This would permit deferral of an assignment of a precise psychiatric label until the patient was nearer the completion of treatment and final disposition. It is recognized, however, that such a procedure might not meet the administrative demands of existing retirement and compensation programs for such patients.

SUMMARY

A study of the changes of diagnoses of 804 psychiatric patients is presented. Patients seen at more than one psychiatrically staffed medical facility were found more likely to have a change of diagnosis. Diagnoses of psychoses and character disorders were more often involved in these diagnostic changes than those of neuroses.

Psychiatric diagnoses by different medical officers were frequently found to be in disagreement. The differences may be due to several factors: varied backgrounds of training and experience, different demands of the immediate administrative situation, the emotional needs of the physicians as reflected in their use of some diagnostic categories, and changing clinical pictures in acutely disturbed patients. Not infrequently, a majority of the diagnoses assigned are inappropriate and require subsequent modification. Meanwhile they tend to confuse the clinical picture, and often are detrimental to the patient by adversely influencing those who care for him or by increasing his discomfort and anxiety because of popular connotations which accompany classical psychiatric diagnostic concepts. The marked variability of psychiatric diagnoses assigned to the patients studied suggests that the clinical handling of acute psychiatric patients might be simplified in several ways by the initial use of a more tentative, descriptive, and less specifically psychiatric label. A formal diagnosis for classification and administrative purposes might then be reserved until later in the course of the patient's hospitalization when the clinical picture is more stabilized.

EFFECT OF MOTHERS' ABO BLOOD GROUP ON ISOANTIBODY

Levels of Group O Children

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THE POSSIBILITY that the Rh_0 blood type in the maternal grandmother may influence the occurrence of hemolytic disease of a newborn infant and the production of anti-Rh_0 in the mother has been considered by various authors. In the rare cases of hemolytic disease of the first-born, unassociated with previous transfusions, Beasley[1] made the suggestion that such mothers may have been immunized *in utero* by Rh_0 antigen from their mothers. Although the embryo is probably a poor antibody producer, it is conceivable that the gestation of Rh_0-negative fetuses in Rh_0-positive mothers might sensitize the fetus so that during subsequent childbearing years a typically marked secondary response might occur.

On the other hand, the work of Billingham, Brent, and Medawar[2] showed that early sensitization of an embryo with foreign tissue renders the mature form of the organism less resistant to later transplant of that tissue. This finding is generally explained on a serologic basis. Exposure of an organism to an antigen at a very early stage in its development is presumed to render the organism incapable of producing antibodies to that antigen at a later time. These antibodies may inhibit a successful transplant. It would appear that the mature organism does not recognize the antigen as a foreign substance as a result of its early exposure. In accord with this concept, Hanan and Oyama[3] showed that rabbits subjected to bovine serum albumin *in utero* and shortly after birth failed to develop antibody to that antigen when full grown. If this principle is applicable to the Rh system, then hemolytic disease of the newborn infant, attributable to the Rh_0 factor, would be more prevalent in infants whose maternal grandmothers were Rh_0 negative. On the other hand, if hemolytic disease were more prevalent in newborn infants whose maternal grandmothers were Rh_0 positive, then Beasley's suggestion would agree with the observations.

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Recently, facts have been gathered in an attempt to answer that question. Booth and co-workers[4] tested 113 maternal grandmothers of children with hemolytic disease caused by anti-Rh_0. They found that the number of grandmothers with Rh_0-positive and Rh_0-negative factors was exactly that expected of mothers of Rh_0-negative persons. Owen and associates[5] extended these observations and presented statistical evidence that the tendency for a woman to develop anti-Rh_0 factors in an early Rh_0-positive pregnancy is greater among Rh_0-negative daughters whose mothers are Rh_0 negative than among those whose mothers are Rh_0 positive. On the other hand, in agreement with the findings of Booth and his group, the relationship is obscure when a classification is attempted on the basis of hemolytic disease of the newborn. Owen's group suggested that the kind or amount of antibody produced in early Rh_0-positive pregnancies by Rh_0-negative women whose mothers are Rh_0 negative is such as to permit a considerable portion of the infants to escape clinically evident disease.

The question was then raised concerning the applicability of the principle of inhibition of antibody formation by early exposure to an antigen of the ABO system. In contrast to the lack of readily demonstrable water-soluble Rh substance, the A and B substances occur in water-soluble form in most of the body fluids and organs of most persons.[6] Thus, one would suspect that the principle, that early exposure to an antigen prevents subsequent antibody formation against that antigen, is, at least, as applicable to the ABO system as to the Rh system.

The possibility that the marked variations in the titer of the blood group isoantibodies among different persons are influenced by the maternal blood group was considered worthy of investigation at this laboratory for various reasons. The titer and characteristics of the blood group isoantibodies are of great significance in the use of blood of persons of group O in transfusion to persons of other groups and in the cause of hemolytic disease of the newborn infant attributable to the ABO system. The latter has been restricted largely to mothers of group O,[7] and our study was limited, therefore, to children of group O. Serologic tests were done on these children's sera to determine the levels of the so-called natural and immune isoantibodies. Natural isoantibodies are characterized by reactivity in saline and are neutralized by the group specific substances. Immune isoantibodies are not neutralized by the group specific substances and require a medium of high colloidal concentration for their demonstration. They are also capable of lysing red cells.

MATERIALS AND METHODS

Blood specimens were obtained from 137 children of blood group O in two U. S. Forces high schools in the Far East. Sera

were separated from the blood and stored at -20°C until tested. Blood specimens were also obtained from the mothers of the children and their blood group determined. Information concerning the age and immunization status of each child was obtained from records at the high schools. Tests were performed on the children's sera for the determination of the levels of saline isoagglutinins, so-called immune isoagglutinins, and isohemolysins.

Saline Isoagglutinins. The sera were diluted in two-thirds fold steps in saline in duplicate. The dilutions ranged from 1:8 to 1:307. One-tenth milliliter of a 2 per cent suspension in saline of fresh human red cells of group A_1 was added to each dilution, and the same quantity of group B red cells added to the other set of dilutions. The tubes were incubated at room temperature for one hour, centrifuged for one minute at 500 G, and read with the aid of a microscope mirror.

Immune Isoagglutinins. To 0.1 ml of undiluted test serum, 0.3 ml of soluble group specific substances A and B was added. This step effects a partial neutralization of the saline isoagglutinins. The mixtures were incubated at room temperature for one hour, and then 0.4 ml of group AB plasma was added, which resulted in a 1:8 dilution. Further serial dilutions were made as in the tests for saline agglutinins except that AB plasma was used as the diluent for both the test sera and red cell suspensions. The tubes were incubated at 37°C for one hour prior to centrifugation, and examinations were performed with the aid of a microscope mirror as in the tests for saline isoagglutinins.

Isohemolysins. These determinations were made with foreign complement according to the method of McDermott and Muschel,[8] which involves the lysis of appropriate red cells by inactivated test sera plus human serum as a complement source. To 0.1 ml of heat-inactivated test serum (56°C for 30 minutes), 0.1 ml of a 5 per cent saline suspension of group A_1 red cells was added. Another tube was similarly prepared with group B red cells in place of the A_1 red cells. Then, as a complement source, 0.1 ml of fresh serum of a group O individual, containing little or no anti-A or anti-B hemolytic activity, was added to both tubes. Appropriate control tubes were also included. All tubes were incubated at 37°C for one hour and read by eye estimate. Fifty per cent hemolysis was scored as a 2 plus reaction.

RESULTS

The results of the various determinations grouped according to the blood group of the mothers are given in tables 1 and 2. In the first group of children (table 1), analysis by the ranking test for the agglutinins and by the chi-square test for the hemolysins[9] did not indicate any significant differences in any of

TABLE 1. *Results of isoantibody tests of group O children from Tokyo Grant Heights School arranged according to their mothers' blood group*

Mothers' group	No. of children	Neg. at 1:8	Titers (1:) 8	12	18	27	40.5	60.8	91.1	136.7	205.0	307.5	Geometric mean
a. *Saline isoagglutinins*								anti-A titers					
A	7	0	0	0	0	0	0	1*	2	3	1	0	114.8
B	3	0	0	0	0	0	2	0	0	0	0	1	79.4
O	70	0	0	1	1	3	10	11	6	17	8	13	104.7
								anti-B titers					
A	7	0	0	0	0	0	0	1	3	2	1	0	108.6
B	3	0	0	0	1	0	1	0	1	0	0	0	40.5
O	70	0	0	5	0	10	11	11	8	12	5	8	71.5
b. *Immune isoagglutinins*								anti-A titers					
A	7	0	0	1	0	1	0	1	1	3	0	0	64.6
B	3	0	0	1	0	0	0	1	0	0	0	1	60.8
O	42	2	0	2	1	3	2	5	4	6	6	11	94.4
								anti-B titers					
A	7	1	0	2	2	0	0	1	0	0	0	1	23.1
B	3	3	0	0	0	0	0	0	0	0	0	0	4.0
O	42	12	2	4	2	8	3	6	1	2	0	2	19.3

c. *Isohemolysin tests*

anti-A reactions			
Mothers' group	No. of children	Less than 2+	2+ or greater
A	7	7	0
B	3	3	0
O	42	32	10

anti-B reactions			
Mothers' group	No. of children	Less than 2+	2+ or greater
A	7	7	0
B	3	3	0
O	42	40	2

*Indicates number of sera positive at a particular dilution

TABLE 2. *Results of isoantibody tests of group O children from a Yokohama school arranged according to their mothers' blood group*

Mothers' group	No. of children	Neg. at 1:8	Titers (1:) 8	12	18	27	40.5	60.8	91.1	136.7	205.0	307.5	Geometric mean
a. *Saline isoagglutinins*							anti-A titers						
A	10	0	0	0	0	0	0	1	2	3	1	3	154.9
B	8	0	0	1	0	0	0	1	4	1	1	0	78.3
O	39	0	0	0	1	0	3	4	3	6	8	14	153.5
							anti-B titers						
A	10	0	0	2	0	0	0	3	2	2	1	0	63.2
B	8	0	1	1	0	0	2	1	1	1	1	0	47.2
O	39	0	4	2	2	7	3	8	5	2	4	2	48.3
b. *Immune isoagglutinins*							anti-A titers						
A	10	5	1	1	0	1	0	1	0	0	0	1	11.7
B	8	5	0	0	0	2	1	0	0	0	0	0	8.6
O	39	16	1	9	2	4	1	4	0	2	0	0	11.5
							anti-B titers						
A	10	1	0	0	0	4	1	0	2	0	0	2	48.2
B	8	0	0	1	0	1	1	1	0	2	1	1	74.6
O	39	4	0	7	1	6	0	9	3	4	0	5	40.6

c. *Isohemolysin tests*

Mothers' group	No. of children	anti-A reactions: Less than 2+	2+ or greater	Mothers' group	No. of children	anti-B reactions: Less than 2+	2+ or greater
A	10	7	3	A	10	5	5
B	8	7	1	B	8	5	3
O	39	18	21	O	39	22	17

the determinations between children of blood group O mothers as compared with children of blood group A mothers. The three children of group B mothers were too small in number for consideration. In the second group of children tested (table 2), the only comparison which reached a significant difference at the 5 per cent level was the low titers of the anti-A saline isoagglutinins and isohemolysins in the children of group B mothers compared with those in children of O mothers. The reason for this difference is not evident. The relatively high anti-B immune isoagglutinin level of the children of group B mothers is noteworthy, but also unexplained. Other variables such as the sex of the children and their age did not exert a significant effect and are not shown. All the children received the same prophylactic immunizations against typhoid, tetanus, typhus, and smallpox at approximately the same time, and, therefore, that factor was probably of little consequence.

DISCUSSION AND SUMMARY

The reason for the wide variation in the isoantibody titers in normal children of blood group O presents a challenging problem. The observations indicating the significance of the maternal Rh_0 type in the development of anti-Rh_0 antibodies suggested that a similar relationship might exist between the maternal blood group and blood group isoantibody development. Accordingly the blood group isoantibody levels of children of high school age was determined and the results classified according to their mothers' blood group. The experiments were designed to test a single point, whether or not the maternal blood group influenced the blood group isoantibody levels. The results indicated that the maternal blood group is not an important factor in influencing isoantibody levels. For example, 17 group O children of mothers of group A had anti-A immune isoagglutinin titers ranging from 1:12 to 1:307.5.

Furuhata and Matsunaga[10] have suggested that the isoagglutinin titer level tends to be hereditarily determined and that simple Mendelian laws are applicable. It seems likely that a host of other factors also influence the isoagglutinin response in a given person. Chance contacts with A- or B-like substances, hormonal factors, protein synthetic ability, and all the other unknown factors which contribute to antibody synthesis probably play a role.

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"MINISTERS OF DEATH"

It appeared to me that in a matter with which the mind of the profession is at present so much occupied, something ought to be said. . . . I accordingly prepared an article on Anaesthetics in which, while I have tried to do justice to a class of remedies, the introduction of which into practice is, I firmly believe, a great boon to humanity, and when used in the particular department of the healing arts to which I have devoted most of my time, enables us to rob labor of half its sorrows and almost all its terrors; I have at the same time, and even with more earnest efforts, labored to impress on the minds of those as yet unfamiliar with their use, the lessons of caution and watchfulness without which I know these agents are and must be *ministers of death.*

—DR. C. R. GILMAN
written in 1851 and quoted by
—PRESTON J. BURNHAM, M. D.
in *Anesthesiology*
p. 544, Sept. 1954

MAJOR BLOOD GROUPS IN KOREANS

SARKIS S. SARKISIAN, *Commander, MC, USN*

AN **OPPORTUNITY** to record major blood groups and Rh_o types in the South Korean population occurred in 1954 as part of the program of Armed Forces Assistance to Korea. The survey included 588 males and 412 females from the civilian population of an area about 20 miles north of Seoul, Korea. Korean medical officers were encouraged to participate in order to become familiar with whole blood banking procedures.

Oxalated whole blood was tested with ABO grouping and Rh_o typing sera. A complicating feature that constantly recurred was the persistent anemia of most Koreans. This probably had resulted from a combination of poor diet and parasitic infestation. The average hemoglobin was found to be 9.5 g per 100 ml of blood (Haden-Hausser method). This, coupled with the relatively small size of the Korean (average weight: 50 kg), resulted in the decision to use a standard blood unit of 350 ml for transfusion and banking procedures.

RESULTS AND DISCUSSION

The findings, tabulated in table 1, are in agreement with information reported by other investigators, as listed by Wiener.[1] The blood group distribution for Koreans approximates that reported for Northern India, where Cappell[2] found the following distribution: Group 0, 28.8 per cent; Group A, 28.0 per cent; Group B, 33.0 per cent; and Group AB, 10.2 per cent. All of the 1,000 Koreans tested were Rh_o-positive, a finding comparable to those reported for Brazilian Indians[3] and Japanese.[4] In the latter, the Rh_o-negative bloods fall within the range of from 0.3 to 1.3 per cent.

As compared with the present survey, Boyd[5] found a blood-group distribution for Koreans having a reversed value of Group O and A incidence. This may be partially explained on the basis of typing serum potency (table 1). Hooper[6] compiled figures for racial blood groupings in various geographic locations as indicated in table 2. The Sino-Japanese blood group percentages that he listed are comparable to those found in Korea. On the other hand, when the Rh_o type is considered as a comparative item, it is noted that Koreans and American Indians are 100 per cent Rh_o-positive, whereas their blood groups do not coincide.[7]

From U. S. Naval Hospital, St. Albans, N. Y.

TABLE 1. *Racial distribution of blood groups*

Nationality	Group O (per cent)	Group A (per cent)	Group B (per cent)	Group AB (per cent)
Koreans (this survey)	27	32	29	12
Koreans (Boyd[5])	32	27	29	12
U. S. population (Schiff and Boyd[8])	40	40	15	5
Icelanders (Donegani et al.[11])	55	32	11	2
Borneo (Graydon et al.[12])	35	29	27	9
Egyptians (Gohar[13])	30	34	25	11
New Zealanders (Staveley and Godley[14])	54	35	8	3
Navahos (Boyd and Boyd[7])	77	23	0	0
Sino-Japanese (Hooper[6])	38	22	27	13
All races (Hooper[6])	40	35	20	5

TABLE 2. *Racial and geographic distribution of blood groups* (from Hooper[6])

Nationality	Groups (per cent)			
	O	A	B	AB
All races	40	35	20	5
Europe and America	39	43	12	6
Sino-Japanese	38	22	27	13
Irish	53	33	11	3

Table 3 lists for comparison the findings of Schiff and Boyd,[8] Snyder,[9] and Barton,[10] showing blood group percentage distribution in the general United States population. The variation in incidence of blood groups in the United States probably represents changes in values due to a shifting population and to influx of other racial groups in areas selected for surveys.

TABLE 3. *Distribution of blood groups in United States*

Investigator	Groups (per cent)			
	O	A	B	AB
Schiff and Boyd[8]	40	40	10-15	5
Snyder[9]	45	41	10	4
Barton[10]	45	39	12	4

SUMMARY

Survey of 1,000 South Koreans showed 100 per cent to be Rh_o-positive. Major blood groups were as follows: Group O, 27 per cent; Group A, 33 per cent; Group B, 28 per cent; and Group AB, 12 per cent. These findings are compared with those reported for other racial groups and geographic areas.

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"Discovery reveals new knowledge, but the new vision which accompanies it is not knowledge. It is *less* than knowledge, for it is a guess; but it is *more* than knowledge, for it is a foreknowledge of things yet unknown and at present perhaps even inconceivable."

—MICHAEL POLYANYI, M. D.
in *The Lancet,* p. 922, June 1956

Clinicopathologic Conference

Madigan Army Hospital, Tacoma, Wash.*

RIGHT HEMIATAXIA

Summary of Clinical History. A 54-year-old white woman entered the hospital on 11 February 1955 because of inability to control her right leg for the previous five days, and a history of "seizures or falling spells" for 20 years. The history revealed that on the previous Christmas Day the patient had stumbled or fallen over a rug, striking the back of her head. The injury required medical care. She recovered without any difficulties. On 6 February the patient noticed that she had difficulty controlling her right leg and was unable to move a scatter rug about with her foot. Her difficulty progressed to a point where she was unable to use her right leg satisfactorily in walking, and her right arm and hand also became affected. Her handwriting was very poor and she could not "make her hand do what she wanted it to do." There were no sensory difficulties in any of her extremities, no aphasia, no difficulty in swallowing, nor any involvement of the facial muscles. The patient was right-handed. A neurologist examined the patient and advised immediate hospitalization. The systemic review revealed a history of chronic bursitis of the right shoulder. The patient did not use tobacco or alcoholic beverages.

The patient stated that she had frequent and severe ear infections as a child, particularly on the right side. She was struck by an automobile as a child, and suffered a mild head injury at that time. The patient had experienced "seizures or falling spells" for the past 20 years. There was no incontinence of either urine

*Brig. Gen. William L. Wilson, MC, USA, Commanding General. From the Neuropsychiatric Department, Col. Alva E. Miller, MC, USA, Chief.

or feces. Neither aura nor tonic or clonic movements were recorded. The patient stated that at times she would get an odd sensation starting in her toes and sweeping up through her body. Prior to admission she had been taking Phenurone (brand of phenacemide) for her seizures. She was married at 29 years of age and gave birth to twin sons. The patient stated she had never been the same since the birth of the children. At about 35 years of age the patient underwent a hysterectomy because of alleged pressure on the spinal nerve by an enlarged uterus. Her local physician regarded this lesion as a possible cause of her "blackout spells." The patient's husband, a year prior to admission, had deserted her for "greener pastures." A biopsy specimen of a breast lesion was reported as benign. The date of this procedure was not recorded.

The patient's mother was living and well; her father died of arteriosclerotic heart disease. Four siblings were alive and in good health. There was no family history of seizures of any kind. The patient had twin sons, one of whom had caused her considerable anxiety within the past year as a result of being arrested and sentenced to prison. He was released about two weeks prior to her hospitalization.

Physical Examination. The patient was a thin, asthenic-appearing white woman in no acute distress, appearing to be her stated age of 54 years. She was co-operative and well oriented. Eye examination revealed normal corneal sensitivity, normal associated movements, and no evidence of papilledema. Vision without correction was 20/80 on the right and 20/50 on the left. The pupils were equal and responded to light and in accommodation. The right ear drum showed a large perforation in the superior-posterior quadrant. The left ear drum was normal. The patient had compensated edentulism. The pharynx was negative, and the neck showed no adenopathy. The chest revealed equal expansion, and the lungs were clear to percussion and auscultation. The heart border on the left was palpated and percussed slightly outside the midclavicular line. The rate and rhythm were normal. There was a grade I to II blowing systolic and diastolic murmur in the aortic area. A continuous murmur, thought to be a venous hum, was heard in the vessels of the neck. The dorsalis pedis pulses were palpable. The blood pressure was 115/70 mm Hg, and pulse rate 76/min. The abdomen was soft; liver, spleen, and kidneys were not palpable; the descending colon was cordlike and easily palpable.

The extremities revealed no gross abnormality but showed limitation of motion in both upper and lower right extremities. The patient lacked full flexion and extension in both right knee and hip joints and was unable to extend the right arm fully. The right wrist joint showed good movement. No muscular fibrillations were

noted. There was moderate atrophy of the right shoulder girdle muscles.

The neurologic examination revealed the cranial nerves to be grossly intact. The finger-to-nose test was unsatisfactory due to limitation of motion of the right arm. Deep tendon reflexes were hyperactive but equal bilaterally, and no pathologic reflexes were noted. Pain, temperature, and touch modalities were all intact. No clonic movements were elicited. The abdominal reflexes were absent.

Laboratory Studies. Hematocrit was 38 ml/100 ml, and the cardiolipin microflocculation test was negative. Urinalysis was normal. Spinal fluid examination on 16 February revealed an initial pressure of 180/mm of water and a closing pressure of 160/mm of water. The spinal fluid was clear; cell count, 0; sugar, 68 mg/100 ml; chlorides, 708 mg/100 ml; globulin, no increase; total protein, 55 mg/100 ml; colloidal gold, 000-000-000-0. Roentgenograms of the chest revealed normal lungs, heart, and bony thorax. Roentgenograms of the skull, right shoulder, and right knee were reported to be negative. The electrocardiogram on 18 February was within normal limits.

Course in Hospital. Examination by the hospital neurologist at the time of admission revealed no localizing neurologic signs. Because of complaints of pain in the right shoulder and a history of "bursitis" for a long period of time, orthopedic consultation was obtained. The consultant reported "tightness" of the right shoulder, particularly of the subscapularis muscle. Both forearms were of equal circumference. The patient was considered to have a conversion reaction, and physiotherapy was recommended for her shoulder. On 21 February the patient's right hand became much worse, and for the first time a positive Babinski reflex was present on the right side with partial paralysis. She was unable to distinguish between simultaneous stimulation of two different areas of the body. On 23 February the cardiac consultant noted distention of the temporal veins and a murmur, heard best beneath the right mastoid but also heard contralaterally. A palpable thrill was present over the right carotid artery, and it was the consultant's opinion that the systolic murmur originated above the clavicle. During the three days from 21 to 24 February there was disintegration of the patient's demeanor, and she became lethargic and developed a mild motor aphagia. She also complained of severe, persistent occipital headache, not relieved by aspirin or codeine. A neurosurgical consultation on 24 February revealed complete right-sided hemiplegia. There was no papilledema, the visual fields were full, and the internal carotid arteries showed normal pulsation on palpation. An electroencephalographic test revealed 25 cycles per second with asymmetry manifested by later-

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alization, with slow frequency in the left temporal and left parietal regions and low amplitude in the left parietal region.

On 10 March at another military hospital, four injections of 35 per cent Diodrast (brand of iodopyracet compound), 12 ml each, were made into the left internal carotid artery, after which the patient had a severe convulsive seizure followed by total aphasia. This was controlled by immediate left stellate ganglion block, and the patient was returned to the ward in good condition. The roentgenogram revealed a large left anterior communicating branch of the circle of Willis. The right posterior cerebral artery was well visualized and led into a large arteriovenous malformation, better visualized just to the right of the midline but believed to extend bilaterally. (A small calcific shadow about 1.5 cm in diameter was seen posterior to the sella turcica, to the left of the midline near the petroclinoid ligament.) The sella turcica was within normal limits of size with no evidence of erosion. The pineal gland was not calcified. The cardiac shadow was slightly enlarged consistent with left ventricular enlargement. Blood pressure remained at 100/80 mm Hg. On 22 and 23 March, the patient experienced several grand mal and petit mal seizures. On 1 April the patient was seen by a civilian neurosurgical consultant, who felt that she had an inoperable lesion.

The patient was readmitted to Madigan Army Hospital on 12 April for custodial care. She indicated evidence of headaches by sign language and had lost considerable weight. On 22 April her condition was considered critical. She was totally aphasic, with complete paralysis on the right side. On 24 April the patient quietly died at 0402 hours.

DISCUSSION

Doctor Lin:* A 54-year-old female patient complained of loss of control of the right arm and right leg for at least five days. Considering the ataxia of the lower extremity there are generally three possibilities, namely, a vestibular lesion, a cerebellar tract lesion, and a posterior column lesion. In ataxia of the upper extremity there are only two possibilities, namely, a cerebellar lesion and a lesion involving the proprioceptive sensory fibers. If this ataxia is due to a lesion of the proprioceptive sensory fibers, then that lesion would have to be in the left parietal lobe. Any lesion which involves the proprioceptive fibers below the thalamus will also involve the fibers of pain and touch. So the differential diagnosis, insofar as localization of the cause of right hemiataxia is concerned, is whether this is due to a right cerebellar lesion or a left parietal lesion.

This patient did not present the classical triad of symptoms of a cerebellar lesion, namely, ataxia, nystagmus, and an intention tremor. The patient's sensations of pain, touch, and temperature are described

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as normal. There is no statement in the protocol that the position sense or stereognostic sense was intact. It is usually difficult to make diagnosis of an early parietal lobe lesion on a casual sensory examination alone, unless one is particularly careful in soliciting the loss of position or stereognostic sense. This patient at the time of admission complained of inability to use the right arm and right leg. There is no statement that she actually had weakness of the right extremity. The limitation of movement of the right arm is felt to be due to a painful shoulder, probably a manifestation of bursitis. The orthopedic consultant felt that she did not have any local shoulder lesion. In view of the incongruity between the inability to use the right arm and the lack of motor weakness, the patient was regarded as a case of conversion reaction at the time of admission. However, there was one positive finding, namely, marked atrophy of the right shoulder. This atrophy certainly was not due to bursitis or disuse because there was no local lesion. This atrophy certainly could not be due to motor paralysis, since there was no weakness. There was no sensory loss to suggest a peripheral nerve disease. Atrophy without motor weakness is clinically suggestive of an early parietal lobe lesion. Guthrie,[1] from his wide experience with gunshot wounds in World War I, was the first writer to describe muscular atrophy in a contralateral arm and leg and hypotonia without motor weakness as a definite clinical syndrome due to a parietal lobe lesion. Moreover, he described the atrophy and the soft, velvety consistency of the skin of the opposite side of the body as a "ladylike skin." Penfield and Robertson[2] also found that a child who developed a parietal lobe lesion before the age of three years subsequently revealed muscular hypogenesis without evidence of motor weakness of the contralateral extremity.

I believe that this woman had an early parietal lobe syndrome manifested by right hemiataxia, muscle atrophy of the right shoulder without evidence of motor weakness, and a history of multiple seizures with bilateral tactile aura. These features taken together suggest a parietal lobe lesion.

The possibility of frontal ataxia should also be considered. This sign is an ataxia produced on the opposite side of the body by a frontal lobe lesion. The reason for its occurrence is related to the close anatomic and physiologic connection between the frontal lobe and the cerebellum through the fronto-ponto-cerebellar tract. This entity has also been described as prehemiplegic and posthemiplegic ataxia. Later, the history states that this patient also had right hemiplegia.

The patient disclosed no evidence of personality change or memory loss which would suggest a prefrontal lobe lesion. The patient had normal visual fields, which rules out occipital lobe and posterior temporal lobe lesions. There is no reason to suspect that this patient had any lesion in her right cerebral hemisphere. The ataxia can be explained on the basis of an early left parietal lobe lesion rather than a posterior fossa lesion. No cranial nerves are involved to suggest a brain stem

lesion. I am willing to say that this patient had an early left parietal lobe lesion which later on rather rapidly involved the posterior frontal motor area and Broca's area of speech.

Now, as to the nature of this lesion: if the petit mal seizures were caused by the same organic lesion which eventually resulted in her demise, then this lesion must be benign for the patient to have survived 20 years. I believe that the most important physical findings were the murmur audible over both mastoid areas and the neck, and the thrill felt in the right side of the neck. The murmur audible in the mastoid area could be due either to intracranial causes or to a murmur transmitted from the heart. Ordinarily, a murmur of aortic valve origin would have to be rather harsh in the aortic region to be audible in the mastoid area. I do not think that this patient's grade I or grade II aortic murmurs would be clearly audible over the mastoid areas. A murmur of aortic origin is usually louder in the neck than in the mastoid region. The reverse is true if the murmur is of intracranial origin. The cardiac consultant was of the opinion that this murmur was "probably of intracranial origin." Doctor Dickerson, would you like to comment on this murmur?

Doctor Dickerson:* I should prefer to confine my remarks to a complete reading of the note which was made at the time under the date of 23 February. The patient was seen at that time because an intern had noted a murmur heard at the angle of Louis over the sternum, which was considered incidental because the patient was regarded at that time as having a conversion reaction. The note of this date is as follows: "Pertinent physical findings are those of a grade I to II systolic and diastolic murmur audible over the pulmonic listening area which is transmitted upward into the neck. There is a continuous murmur in the neck, more prominent in the systolic phase. There is distention of the temporal veins without thickening or tortuosity of the peripheral arteries. Arterial pulsations are readily palpated in the occipital area, and the vessels are thickened. The murmur in the neck has its maximum intensity beneath the right mastoid area, although it is transmitted to the opposite side as well. This is not a venous hum because it cannot be obliterated by moderate pressure. In addition, there is a palpable thrill over the right carotid artery which is faint but unequivocal. Ophthalmoscopic examination, though unsatisfactory, does show blurring of the disk margins bilaterally with some erythema of the disks and, I believe, a recognizable degree of papilledema. Examination of the chest clearly indicates the murmur's origin as being well above the clavicles. I believe that it is an acute cerebral vascular lesion with findings consistent with an arteriovenous aneurysm, a vascular tumor, or an atypical subdural hematoma. Recommend the patient have immediate cerebral angiography." At that time, it seemed most certain that the patient was not suffering from a chronic disorder. On the other hand, she talked and

*Lt. Col. Robert B. Dickerson, MC, USA, Chief, Cardiology Service, Medical Department.

acted as if she would enjoy discussing her numerous illnesses at considerable length.

Doctor Lin: Doctor Dickerson, you mentioned that this could not be a venous hum. Was it because you occluded the jugular vein distal or proximal to the point of auscultation?

Doctor Dickerson: I think the distinction is academic, and I was not concerned with whether the applied pressure was proximal or distal to the point of auscultation. What was meant to be conveyed was the fact that a venous hum is readily effaced by pressure over the vessel whereas an arterial bruit is not.

Doctor Lin: Isn't it true, Doctor Dickerson, that if the thrill or hum from the arteriovenous anomaly is due to the turbulent action of the arterial flow in the vein, pressure exerted on the contents of the carotid sheath distal to the point of auscultation would obliterate only the humming of intracranial origin, while pressure on the carotid contents proximal to the stethoscope would obliterate any arterial thrill?

Doctor Dickerson: Perhaps you did not understand me. When I said it is not possible to obliterate the hum by pressure I meant ordinary pressure. Considering an elevated venous pressure you are not going to efface the thrills. Of course, if you apply enough pressure to occlude the artery, then the sound disappears. This is the characteristic finding of an aneurysm. However, let me state in summary that the murmur in the neck was not regarded as cardiac in origin.

Doctor Lin: Theoretically, a very malignant glioma could possess enough arteriovenous shunt to produce some murmur. Indeed, a very vascular meningioma may do the same thing. A bruit is usually heard over the scalp at the site where the tumor is actually situated. A very large-sized aneurysm is usually situated at the intracranial portion of the internal carotid artery. The murmur is usually audible on the same side in the vicinity of the aneurysm. This patient did not have extraocular motor weakness or trigeminal nerve involvement, symptoms usually associated with such a lesion. The most common cause for the murmur heard over the scalp is an intracranial arteriovenous anomaly. There are usually two types: One is the congenital type—the arteriovenous aneurysm; the other is of traumatic origin—the arteriovenous fistula. The arteriovenous fistula is usually due to fracture of the base of the skull causing communication between the cavernous sinus and the internal carotid artery. The latter frequently has obvious ocular findings, and the murmur is usually best heard in front of both eyes. This patient did have a head injury before the onset of her recent symptomatology, but the fall was not serious enough to suggest that she had sustained a basal skull fracture. The most likely diagnosis, therefore, is a congenital arteriovenous anomaly. One finding of significance is the presence of distended temporal veins. There was no mention upon which side the temporal veins were distended, so I presume it was both sides. Is that correct, Doctor Dickerson?

Doctor Dickerson: That is correct.

Doctor Lin: It is not unusual to see distended temporal veins or scalp veins in a case of arteriovenous anomaly if the arteriovenous anomaly drains all its blood into the superior sagittal sinus. When the pressure in the superior sagittal sinus is increased due to the arterial flow, then it is possible for the scalp veins to be distended through their connection with the emissary veins. The chronicity of this case also suggests that there is probably a congenital anomaly.

There is one perplexing point, namely, that this patient obviously had the lesion in the left cerebral hemisphere. Now, why was the thrill and murmur heard on the right side? The fact that the murmur is best heard over the mastoid area is because of turbulence of the arterial blood in the underlying transverse sinus. Because the murmur is better heard on the right side does not necessarily mean that there has to be an arteriovenous lesion on the right side. It only indicates that the arteriovenous anomaly drains its blood into the superior sagittal sinus which in turn drains most of its blood into the right jugular vein. A murmur from an arteriovenous anomaly in the left cerebral hemisphere which drains its blood into the superior sagittal sinus may be best heard in the right mastoid area. Similarly, any murmur produced by an arteriovenous anomaly which is deep-seated and which drains most of its blood into the great vein of Galen may best be heard over the left mastoid area, and if there is any hum or thrill in the neck it would be felt on the left side.

If this was a benign arteriovenous anomaly, why then the sudden progression of symptoms? It could be due to a sudden progressive increase in the size of the arteriovenous anomaly encroaching from the parietal lobe to the posterior frontal lobe or it could be due to a slow-growing intracerebral hematoma. Another possibility is the shunting phenomenon seen in many arteriovenous anomalies. The arteriovenous anomaly in the left parietal lobe could shunt more of its blood from the middle cerebral artery and as a result produce oxygen deprivation in the left motor cortex.

Later on this patient developed lethargy. Lethargy is due either to increasing intracranial pressure or direct involvement of the hypothalamus and mesencephalon. The early spinal tap did not show any significant increase of intracranial pressure. The lethargy could be explained on the basis of the deep extension of the arteriovenous anomaly into the midbrain. May we have the x-ray film of the right shoulder please? Doctor Maki, is there any evidence of atrophic decalcification in the right shoulder?

Doctor Maki:* Yes, there is a slight amount of demineralization of the bony structure. In addition, there is moderate atrophy of the shoulder muscles. There is no evidence of calcification in the subacromial bursa.

*Capt. Henry E. Maki, MC, USA, Chief, Radiology Service.

Doctor Lin: The most striking feature in the plain skull x-ray film is a markedly dilated left middle meningeal artery (fig. 1). This finding is almost characteristic of a parasagittal meningioma. Purely on the basis of physical findings, I am sure that this patient has an arteriovenous

Figure 1. Lateral view of skull with the arrow pointing to the dilated left meningeal artery. A small mass of calcification can be seen behind the posterior clinoid process.

anomaly. It is rare to have an arteriovenous anomaly receiving its blood supply through both the internal carotid artery and the middle meningeal artery or branch of the external carotid artery. There is no osteoblastic change in the inner table of the skull, frequently seen in a meningioma. The other significant finding here is the large groove formed by the superior sagittal sinus. The enlargement does not go all the way down to the torcular Herophili. It seems that the enlarged superior sagittal sinus only involves the middle and anterior portion. The posterior por-

tion is not enlarged. This suggests that there may be an obstruction of the superior sagittal sinus.

The other finding is a discrete calcified lesion situated on top of the left petroclinoid ligament. It seems that this calcification is attached to the posterior clinoid process and appears not to be related to the patient's illness.

The left cerebral angiogram shows that the anterior cerebral artery is in normal midline position in the anteroposterior projection (fig. 2).

Figure 2. A left anteroposterior projection of the left carotid angiogram at the early arterial phase. The anterior cerebral artery is in a midline position. A questionable density suggesting the venous stain of a vascular anomaly can be seen posterior to the shadow of the right frontal sinus.

There is one striking finding in the lateral view (fig. 3): The callosomarginal branch of the anterior cerebral artery, instead of curving all the way back as it normally should, stops abruptly at its midportion and then curves upward as if being stopped by a lesion. The other interesting finding is that the middle cerebral artery is depressed downward, as commonly seen in a parasagittal or superior convexity lesion. In the late arterial phase or early venous phase, one sees the presence of the arteriovenous anomaly situated in the parietotemporal area. In the late venous phase there is a diffuse dye stain covering the entire left parietal lobe and most of the occipital lobe.

Figure 3. Lateral projection of a left carotid angiogram during the arterial phase showing the upward curvature of the callosomarginal branch of the anterior cerebral artery. A large vascular anomaly is located in the parieto-temporo-occipital area.

This is the difficult part of the interpretation of the cerebral angiogram. Is all of this density in the parieto-occipital lobe part of the

arteriovenous anomaly? There is no doubt that the lower portion of the parietotemporal area contains large veins of the arteriovenous anomaly. I cannot see any connection between these tortuous veins in the parietotemporal area and the dye in the parieto-occipital region. There seems to be a line of demarcation between the two blotches of dye. Now, if all of these are the arteriovenous anomaly, this is a huge lesion. One would expect a much larger source of arterial blood supply, and instead it is only supplied by a small branch of the middle cerebral artery. The density in the left parieto-occipital area is therefore indicative of a tumor.

In summary, my diagnosis, after seeing these x-ray films, is that this patient has two lesions—one, an arteriovenous anomaly of the left parietotemporal area, and two, a meningioma in the left parietal parasagittal area. The lack of lateral shift of the anterior cerebral artery in the anteroposterior cerebral angiogram could result from the fact that the lesion is probably too far posterior. The other explanation for the lack of lateral shift is that this may be a bilateral parasagittal lesion. This would also explain the patient's bilateral tactile aura of the sensory seizures. I do not think that the calcified lesion originating from the posterior clinoid process is of any significance. I think it is probably a benign lesion and perhaps a small meningioma too.

Dr. Lin's diagnoses:

1. Arteriovenous anomaly, left parietotemporal area, with massive intracerebral and subarachnoid hemorrhage
2. Meningioma, left parietal parasagittal area

PATHOLOGIC FINDINGS

Doctor Pophal:* The autopsy revealed a markedly emaciated woman appearing older than her stated age and weighing 83½ pounds. The brain weighed 1,330 grams and showed marked flattening of the convolutions, principally over the left cerebral hemisphere. In the right parietal lobe adjacent to the occipital lobe there was a 5-cm, cavernous vascular anomaly (fig. 4) supplied by the right posterior cerebral artery. This lesion is regarded as a congenital vascular malformation rather than a true neoplasm and was most likely responsible for the patient's fainting seizures, probably based on episodes of cortical parenchymal hypoxia. The bilateral mastoid murmurs and thrill in the right side of the neck are considered to be a manifestation of an arteriovenous communication. The demonstration of this vascular lesion on the right side by left carotid arteriogram indicates shunting of blood through the circle of Willis. However, the venous drainage could not be traced. There was no cardiac hypertrophy or polycythemia to suggest chronic circulatory embarrassment.

The other lesion of interest was a malignant glioblastoma multiforme in the left frontoparietal area (fig. 5). The lesion was 5 cm in diameter,

*Capt. Mahlon J. Pophal, MC, USA, Assistant Chief, Laboratory Service.

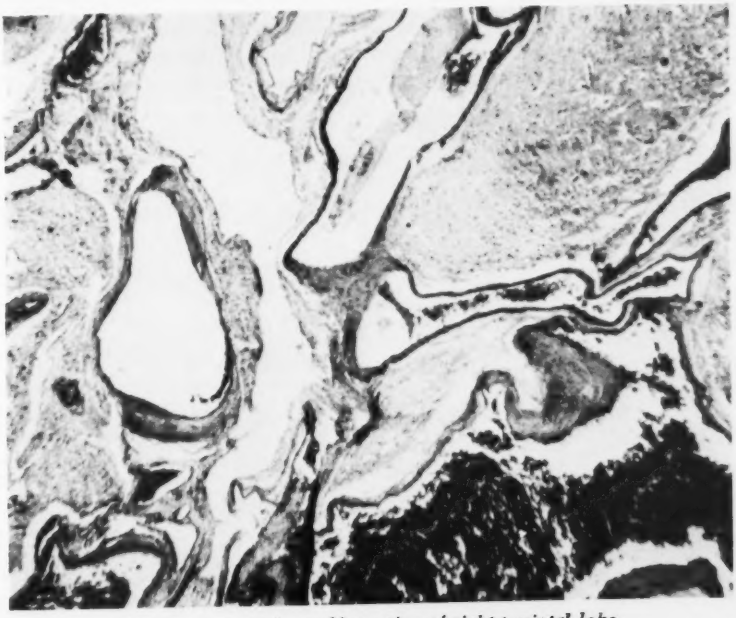

Figure 4. Vascular malformation of right parietal lobe.

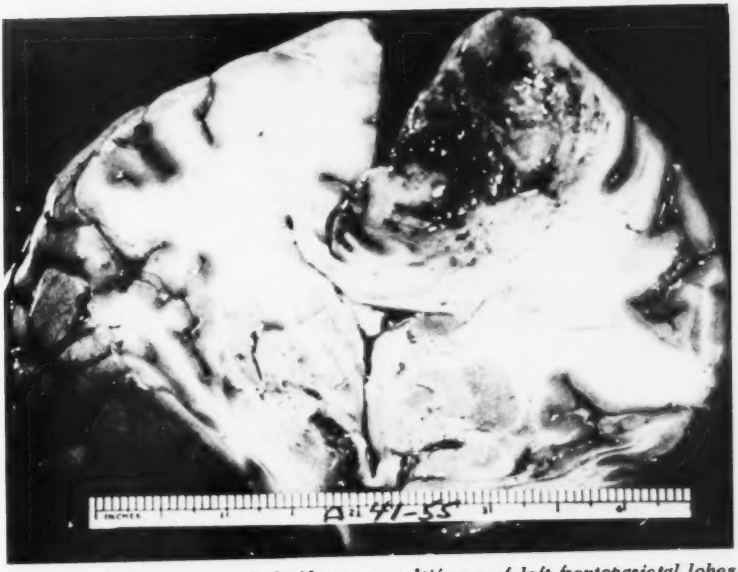

Figure 5. Anterior view of glioblastoma multiforme of left frontoparietal lobes.

extending anteriorly to within 3 cm of the tip of the frontal lobe and medially to the corpus callosum. The microscopic features (fig. 6) include small areas of necrosis and hemorrhage, thickening of the walls of small blood vessels, and multiple types of neoplastic cells ranging

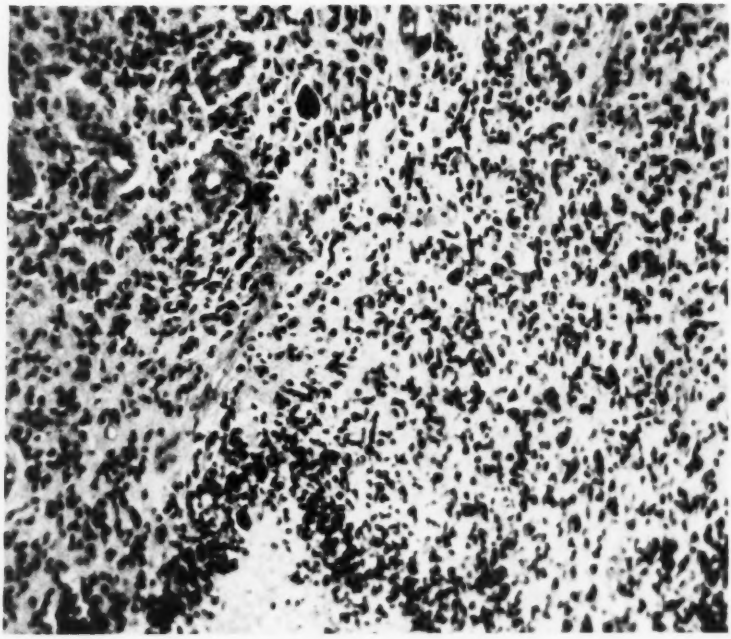

Figure 6. Photomicrograph of glioblastoma multiforme showing thickened blood vessels, giant cells, and necrosis.

from small size with scanty cytoplasm to large multinucleated giant cells. The small calcific body noted on the roentgenograms was not associated with either major lesion. No metastases were found. The lungs revealed hypostatic pneumonitis.

Pathologic diagnoses:

1. Glioblastoma multiforme, left frontoparietal lobes
2. Arteriovenous anomaly, right parietal lobe
3. Hypostatic pneumonitis

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INTERPERSONAL RELATIONS IN THE HOSPITAL

KENNETH E. PURDY, *Hospital Corpsman, second class, USN*

IN THOUSANDS of hospitals the world over there are two groups of people working toward a common goal. The groups: the hospital personnel and the patients; the goal: a sick man made well. Many thousands of treatments will be given and millions of procedures followed in an attempt to bring about the patient's recovery. With each treatment and with every procedure, the patient and the hospital staff will be working together, sharing their experiences, and relating their hopes and fears. These relationships, be they good or bad, will influence the patient's recovery as much as will the medications and other treatment he will receive.

Modern medicine has made many and rapid advances in discovering new drugs and treatment procedures and in training personnel to treat the various illnesses that confront them, but has fallen behind in stressing the importance of good interpersonal relationships and in training personnel to deal effectively with the individual as well as the illness. As a result, the patient's stay in the hospital is often prolonged and needlessly frightening, and the recovery can be delayed.

In discussing the importance of interpersonal relationships in the hospital itself, it is necessary to look at the roles of those who have direct contact with the patient. The hospital treatment team consists primarily of the doctor, the nurse, the corpsman, and the *patient*. (Traditionally, nursing care has neglected the participation of the patient in the treatment procedures.) Since successful treatment largely depends on the combined efforts of hundreds of other persons indirectly associated with treatment of the patient, no one member of the team is any more important than the other, and none can be excluded.

THE MEDICAL OFFICER

In the Navy, the medical officer is in charge of the ward. More rarely, an individual physician is assigned to an individual patient. When in charge of a ward administratively, he is directly

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responsible for ascertaining that the patient receives the type of treatment that will bring about the most rapid and the most complete recovery. He will order the indicated medications and treatments, and will make the medical and administrative decisions that will best help the patient. His experience and training enable him to make these decisions to the patient's advantage.

This same experience and training determines the medical officer's position as the leader of the treatment team, and as such, another of his responsibilities is that of an instructor and counselor to the rest of the team, especially to the members with less training who must rely on ample and clear instruction to perform their duties in the patient's recovery. Staff meetings, individual consultations with the other staff members, and explanations of the patient's illness are a necessary part of the ward medical officer's responsibilities. Unfortunately, many physicians lack the time or fail to realize the importance of this aspect of their role.

To the patient, the physician represents authority in the hospital. He decides not only the patient's specific medical treatments, but to a great extent the pattern of the patient's daily living and oft times for extended periods of time. It will frequently be the physician who determines when the patient can get up, when he can walk about, when he can visit and with whom; it is almost as though the physician were the epitome of the control during his hospital stay, and the physician should be willing to accept this role, too, as one of his primary jobs in helping the patient. The patient will look to him much as a son looks to his father for advice, counseling, and comfort; part of the physician's duties are to recognize this situation and to be aware of its importance.

THE WARD NURSE

The ward nurse has a different role to fulfill. Her primary duty is to ensure proper nursing care for the patient, to carry out the orders of the medical officer, and to provide the patient with an environment conducive to recovery. In actual practice, her role far exceeds the mere carrying out of orders and the often impersonal routine of good housekeeping. She is a nurse, and as such represents to the patient the kindliness and understanding of a mother for her sick and dependent son. Even the word "nurse" brings to mind "tender, loving care," and the nurse should provide just that for the patient. She will be in direct contact with the patient far more than the physician, and is in a position to see the patient as an individual and to help him in many other ways. The patient, by virtue of his illness and hospitalization, is dependent on the nurse to meet many of his needs, both physical and emotional. Neither can be forsaken.

The nurse, like the physician, is also responsible for teaching and helping others on the staff. She has a greater chance to teach them for she will be working directly with them day and night. She can supervise their actual performance on the ward and can many times anticipate difficulties before they arise. Small problems, unchecked, result in needless extension of hospitalization, and the time taken to solve them means less time to help the patient. The nurse can be a helpful friend to the other personnel too, for she understands the fears and doubts that come from not knowing, and can share her understanding with them.

THE HOSPITAL CORPSMAN

The role of the nospital corpsman is one of the most essential in the military hospital. The corpsman is the one who shares most of the patient's day with him. Often only the corpsman hears the patient's complaints, and shares his hopes and fears. It is the corpsman who is called to the bedside to talk a few minutes with the patient, or to hear the story of something that the patient considers is important enough to be told. Frequently it is the corpsman who gives the medication, who carries out the treatment plan, who feeds the patient and bathes him. The patient on the ward learns to depend on the corpsman, and to trust or not trust him as he warrants. The corpsman is the one who is primarily on call to meet the patient's needs.

The hospital corpsman's medical training is far less extensive than that of the physician or nurse and there are naturally many questions that continually come to his mind. It is the responsibility of the physician and nurse to see that their staff receives ample training, and that their questions are answered, but the corpsman must do his share, too, in training himself. How many questions go unanswered because they have never been asked? Though the physician or nurse may be very busy indeed, usually they will take the time to answer the questions of an interested helper. The responsibility for asking and re-asking the questions, expressing doubts, and presenting the problems that may arise rests with the corpsman himself. It is part of the corpsman's job to see to it that he learns as much as he can in order to better help the patient.

THE PATIENT

The most important member of the treatment team is, of course, the patient himself. The rest of the team would not exist if it were not for the needs of the sick person, the patient. Each member of the team is obligated to serve the patient to the best of his ability. Let's look, then, at the role of the patient in the hospital.

The patient, no matter what his diagnosis might be, is *sick*. That implies much beyond the illness itself. It is never only an inflamed appendix, a fractured skull, or an acute psychosis. He is an individual, who, unlike the other members of the team, is ill. He has something wrong with him; *he is different*. His illness might be heroic, like a war wound; it might be socially acceptable like pneumonia; or it might be socially unacceptable, like a mental illness, but he has nonetheless left the group of the healthy and come to the group of the sick, that group outside the office or ship, and has joined that "different group" inside the hospital. The patient feels this difference, and knows that he is no longer a part of his former society, but is in a strange and new world, that of a hospital.

The patient coming into the hospital is a confused individual, as anyone would be when confronted with a new and different world, handicapped by an illness that makes it difficult to adjust. The hospital, the white gowns, the examinations, the new and unfamiliar vocabulary of the people around him represent something entirely new to the patient; something he doesn't understand. In this situation he has little idea of what is expected of him; his part in the treatment plan is vague. He realizes only that he is there and that he wants to get well. The hurried receptionist, the abrupt nurse, the whirlwind of examinations, x-rays, et cetera, add to his confusion and to his fears.

All patients are afraid in one way or another. The hospital may represent sickness and death. Through the years of his life the patient has heard other people talk of their experiences in the hospital, and the hospital may have come to represent the terminal place in the course of an illness. "A patient goes to a hospital when he is too ill to be cared for at home; people die in hospitals," and the patient fears this possibility. These fears are exaggerated, but they are present and make the patient's position in the hospital uncomfortable and frightening to him.

If the natural confusion and fear were not great enough hindrance to the patient's recovery, he is also alone. He has been hospitalized, and has been forced to turn himself and his well-being over to strangers. Until his admission he was among his friends; he felt that he had someone to turn to, to talk with, to relate to. He was part of a group, wanted and accepted. Suddenly, when he becomes ill and needs more than ever the support of friends and family, he finds himself alone and dependent upon strangers.

This role of dependency is quite new to the patient as it would be to any mature person. One day he is independent and self reliant, making his own decisions, going his own way. The next

day he is sick and he must give up his independence. He must ask other people to do this or that; he must depend on others to bring him food, to dress him, in clothes of their choice, even to bathe him. He realizes that, because he is sick, he *must* depend upon these people, and is frightened even more by the realization that he is no longer able to depend on himself. At a most crucial point, when he is disabled by an illness, he must turn himself over to strangers. How can he feel secure that they will care for him? What if they let him down? What if they make a mistake? It is a frightening situation, and what is more frightening is that the patient is helpless to do anything about it.

Thus, the patient in the hospital is far more than a specific illness as described in a medical textbook. He is someone who knows neither what is expected of him nor what will happen to him. Sickness, illness, and injury are probably something new to him, and he is dependent upon strangers to carry him over a most crucial part of his life. With this in mind, medical practice must be aware that there is much more to treatment than medications, clean dressings, and hospital surroundings.

THE PATIENT'S ORIENTATION

The patient's treatment actually begins as soon as he enters the hospital; his recovery is either started or delayed at that time. His first meeting with the nurse or corpsman begins the first phase of the relationships that will develop during the course of treatment; that of orientation.

The patient, entering the ward for the first time, is entitled to a good, friendly orientation. He should be made to feel at home on the ward and a part of the new group of people immediately. His first impression should be that he is the most important person on the ward at that moment, for, in effect, he is. His orientation should include a trip around the ward, if practical, so that he will be physically acquainted with his new surroundings. The head, the galley, the visiting areas, et cetera, should be pointed out to him, and he should be indoctrinated to the new routines that he is expected to follow. The time it takes for a thorough indoctrination is small compared to the time it will take at inconvenient moments, to show the patient these places as he needs them.

An introduction to the people on the ward is the second part of a good orientation. The other patients on the ward are to be his new friends, and he needs to know them and to be accepted by them. As soon as he is able to make new friends he will begin to feel less alone. Much of the orientation can be accomplished for the nurse or corpsman by the other patients if she helps the new patient to make friends quickly. The patient should

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be introduced as soon as possible to the hospital staff on the ward, too, that he might learn to trust them at the start.

The orientation does more than just acquaint the patient with the ward and the personnel. It is either a positive or negative step in making him feel wanted, respected, and cared for. If he feels at the start that he is in good hands, he will probably continue to feel that way; if, however, the staff have no time to acquaint him; if he is rushed through the orientation in an impersonal manner, the seeds of doubt will be sown, and he will wonder if they have time for him when he really needs it.

If and when the patient begins to feel at home on the ward, and begins to feel secure and wanted, he will begin to identify with the other people around him, especially with the personnel who are caring for him. This can be of advantage or disadvantage to the patient, depending on how the personnel conduct and present themself. The patient will begin to accept as his own the characteristics and feelings of those around him. It is up to the nurse and corpsman to allow him to gain strength and confidence from them. This they can do only if they present themselves as secure, honest, and interested persons. The patient is not able to draw confidence that is essential to his well-being from those who present themselves as insecure and doubtful. It is necessary that the corpsman and nurse examine themselves critically during all phases of the treatment, so that they may present themselves advantageously to the patient.

The patient, in his everyday relationships with the nurse and corpsman, will take from them whatever is available; strength, confidence, hope, et cetera. On the other hand, he may draw from these people fears, doubts, and insecurities. These additional fears, combined with his natural doubts, can hinder his recovery to a great extent. The staff must provide as part of their duties, positive feelings for the patient while he is being treated. This they can do only by understanding themselves as well as the patient, and by working with his well-being in mind at all times.[1]

THE TEAM CONCEPT

If a team is to work as such, especially where the welfare of another person depends on its effectiveness, the members must work in harmony. Successful treatment starts with good interpersonal relationships among the staff. There is no time in the hospital for petty differences among the staff members, and certainly no place for the larger and more complex difficulties that may result if the small problems are allowed to grow. The team must work together to solve these smaller problems as they arise. To do this, however, it is necessary that they be able to communicate with one another on a friendly level. Each

member of the team should feel free to express himself to the others, and should seek advice and help from the others. From the doctor to the corpsman, each person has ideas that are good and sound and makes observations and formulates opinions from which the other team members can profit. At the same time each of the members must respect the others, and realize that each is capable of making errors, and that the other man's opinion might be better than one's own. It is true that decisions of a medical nature must be made by the doctor, but decisions affecting the patient's daily living and his emotional well-being should be discussed by all concerned in order to provide the best care. Each team member should be given the opportunity to relate his experiences and present his ideas, and each should be made to feel that he is needed and is important to the patient's welfare.

An effective way of presenting staff problems and discussing the patient's welfare is in staff meetings, at *frequent* intervals. In these meetings the nurse and corpsman can learn what is indicated for the patient's care, and the doctor can learn what the patient says, does, and feels during the 23 hours when he isn't able to be with him. Personal differences among staff members, differences between staff members and the patients, and general ward problems can be brought into the open and resolved in an intelligent way. When the team feels and thinks as a team, they will work as a team.

It is the primary duty of the treatment team to bring about a resolution of the patient's illness; it is, in fact, their sole purpose in being in the hospital. To resolve the illness they must also resolve the doubts and fears that are hospitalized with the patient. This can only be done by critical observation of oneself and by promoting a feeling of good will on the ward at all times. Interpersonal relationships, positive or negative, are decisive factors in the patient's recovery.

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"But the only answer that will impress me is an adequate experiment. Not 1000 experiments with 10 million trials and by 100 separate investigators giving total odds against chance of 10^{1000} to 1—but just one good experiment"

—GEORGE R. PRICE
in *Science*, p. 367, Aug. 1955

IMPROVED RIPCORD FOR RELEASE OF INTERMAXILLARY ELASTIC FIXATION

JAMES M. STRICKLAND, *Major, USAF (DC)*

SEVERAL types of ripcord for quickly removing intermaxillary elastic fixation in fractured jaw cases have been reported.[1] All are effective but require that two ripcords be pulled, one for each side of the mouth. Considering the physical urgency and acute mental anxiety experienced in vomiting, and the mental awareness of the physical limitation of opening the mouth after fixation of the fracture, it is important that there be only one ripcord for the patient or an assistant to locate and pull.

In an improved technic (figures 1 and 2) a single ripcord wire is passed through, rather than lingual to, all intermaxillary elastics so that the pull will be on the distal extent of each elastic. In this way, some of the elastics will be pulled off the intramaxillary loops while others will be severed by the wire. Severing only the distal extent of each elastic requires half the pull to sever both distal and mesial extents, as would be necessary if the wire were lingual to both.

One end of the ripcord is passed through the intermaxillary elastics from anterior to posterior on one side of the mouth and brought anteriorly facial to all elastics out through the mouth orifice. The other end is inserted in a like manner on the other side of the mouth. At this point there are two ends extending from the mouth and the middle section of the wire laying anterior to the anterior teeth. These two ends and the middle section are secured together in the midline of the mouth to effect a single ripcord. Figure 3 shows a method of securing the wire in this area. The method is important only in that it is effective.

The same one-pull efficiency of this technic can be obtained in the reported methods referred to by securing the right and left ripcords so that both will pull together, thus eliminating the time and confusion of locating and pulling two cords. I do not consider dental floss to be of adequate strength for these cords.

At this base, a ripcord is inserted in the mouth of every patient requiring intermaxillary fixation. It is left in place for the first few days while he recovers from general anesthesia, adjusts

From U. S. Air Force Hospital, Scott Air Force Base, Ill.

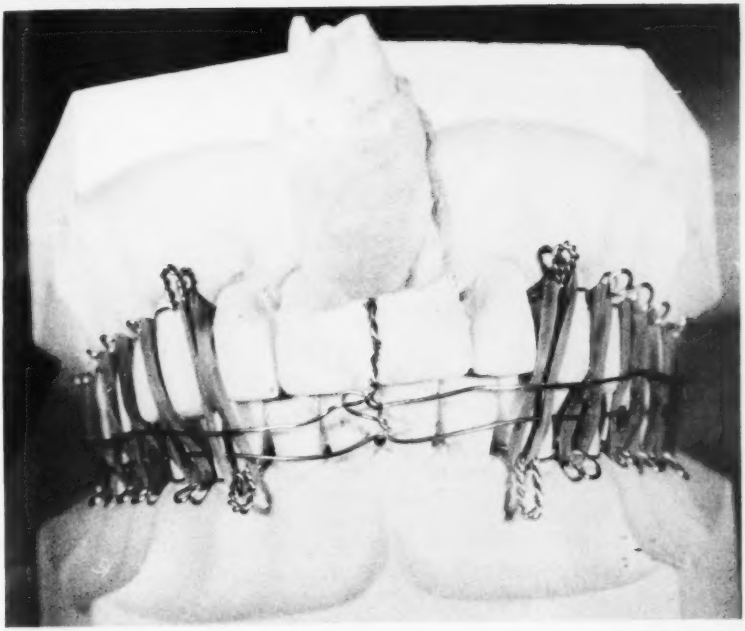

Figure 1. Anterior view of ripcord on model showing adhesive tape knob facilitating pull.

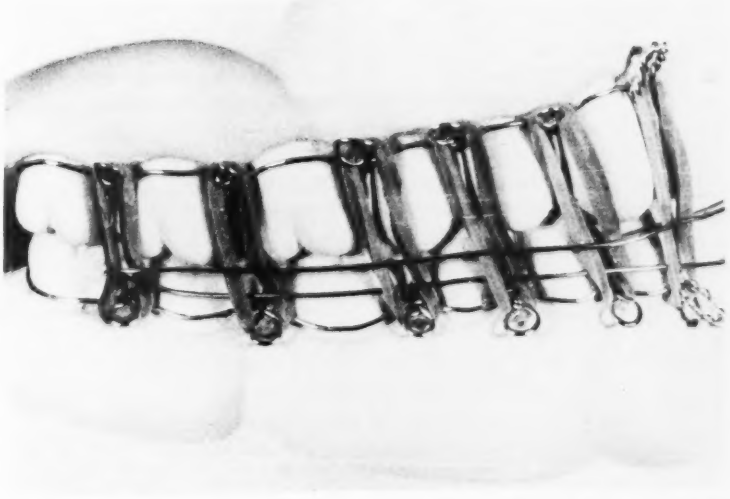

Figure 2. Right lateral view of ripcord on model showing relation of wire and elastics.

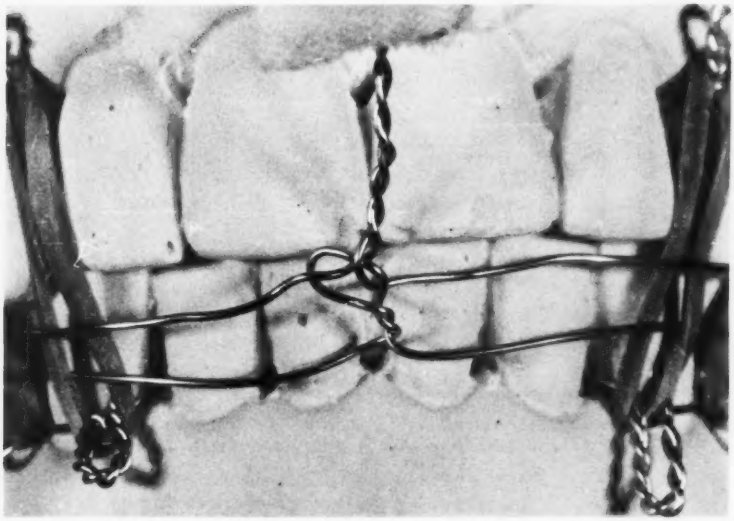

Figure 3. Anterior view of a method of securing wire for most advantageous pull on elastics.

to the difficulties of eating, drinking, and talking with the mandible fixed, and until the traumatic edema, which makes deglutition difficult, has subsided. It is also inserted in all patients leaving the hospital for any reason prior to removal of intermaxillary fixation. In spite of the fact that only a few patients require emergency release of the ripcord, the risk of asphyxiation to one patient because of the failure to provide so simple a preventive is too great to be neglected.

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It is a classic: the practical man is one who practices the mistakes of his forefathers.—Martin T. Fischer

Mucous Cysts of the Lip

HARRY L. LEVIN, *Commander, DC, USNR*

MUCOUS CYSTS of the mouth are usually small, but there are occasions when they attain sufficient size to cause disfigurement and to interfere with mastication and speech. The mucous cyst may be confused with a mixed tumor of the salivary glands or with a lipoma.[1] According to Lever:[2] "Mixed tumors of the skin or mucous membrane show epithelial cells arranged in nests and strands as well as around small lumina. Either one or two layers of epithelial cells are present around the lumina and scattered through the stroma. The stroma shows mucoid and hyaline degeneration." The lipoma is a soft, rounded, lobulated subcutaneous growth which may or may not be movable against the overlying skin or mucous membrane of the lip. Lipomas are composed of fat cells which are usually surrounded by a connective tissue capsule. Mucous cysts are fluctuant. The cystic lumen contains large pools of mucin in which may be found scattered leukocytes and desquamated epithelial cells. The cyst wall is thin and is composed of a fibrous connective tissue capsule. Treatment consists of complete excision of the cystic mass to ensure against recurrence.

Mucous cysts are retention cysts caused by blockage of the ducts of the mucous glands or by epidermal inclusions. The cysts contain a shiny mucinous fluid with a high cholesterol content, and crystals or slits are easily detected in microscopic section. The incidence of this type of cyst is higher in the young than in the adult; Baden[3] reported his experience with a mucous cyst in a 12-month-old infant, and Meyer[4] removed a retention cyst from the oral cavity of a 3-month-old baby.

CASE REPORTS

Case 1. A white seaman about 20 years of age, well nourished and in no apparent acute distress, presented himself for removal of a mucous cyst of the right side of the lower lip. The cystic mass was painless and fluctuant when palpated. He had not been injured in any manner, nor had he traumatized his lip by biting it while he slept. He awoke one morning noticing a small elevation about the size of a pea. After a short time the patient became disturbed, for the cyst began to grow rapidly, attaining the size of a hazel nut within a period of six weeks (fig. 1).

From U. S. Naval Receiving Station, Boston, Mass.

Figure 1. Preoperative view of mucous cyst (or "mucocele"), arising from the mucosa of the lower lip, right side.

Case 2. A 28-year-old white man one morning noticed a cyst on the inner surface of the lower lip which produced discomfort whenever he ate or drank hot foods. At sick call at another activity, it was squeezed, but after a few days it returned to its original size and was painful.

Physical examination was essentially negative for both patients. Neither had any adenopathy of the glands of the neck. Complete blood cell counts, urinalyses, and serologic tests were within normal limits. The presumptive diagnosis in both cases was mucous cyst.

Pathologist's report (case 1). The sections shown were taken from the gross specimen (fig. 2), which was a soft, circumscribed mucous

Figure 2. The mucous cyst just prior to complete enucleation.

cyst with a small fragment of overlying lip mucosa (fig. 3). The cyst wall was thin and composed of fibrous connective tissue that was infiltrated with chronic inflammatory cells (fig. 4). The cyst was partially lined with squamous epithelium. This was most prominent on the superior aspect immediately beneath the surface mucosa.

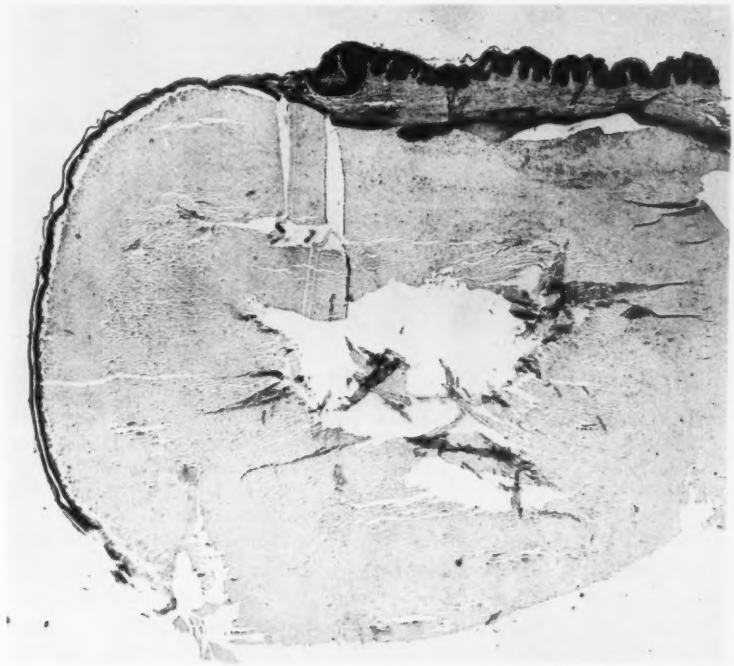

Figure 3. A large, well-circumscribed mucous cyst with a small fragment of overlying lip mucosa.

DISCUSSION

Any lesion, regardless of size, that requires surgical removal should be sectioned and examined microscopically. If it is benign, recovery is usually uneventful and rapid. However, if sections reveal sheetlike arrangement of the cells, predominance of mucoepidermoid cells, and absence of tubular and papillary features (such as are seen in benign forms and mucin pools), the section may be considered potentially dangerous.[5] Malignant degeneration in epithelial cysts is rare, occurring in approximately 1.5 per cent of cases.[6] If such degeneration occurs, it takes the form of squamous-cell carcinoma, which usually is of low-grade malignancy and does not metastasize.

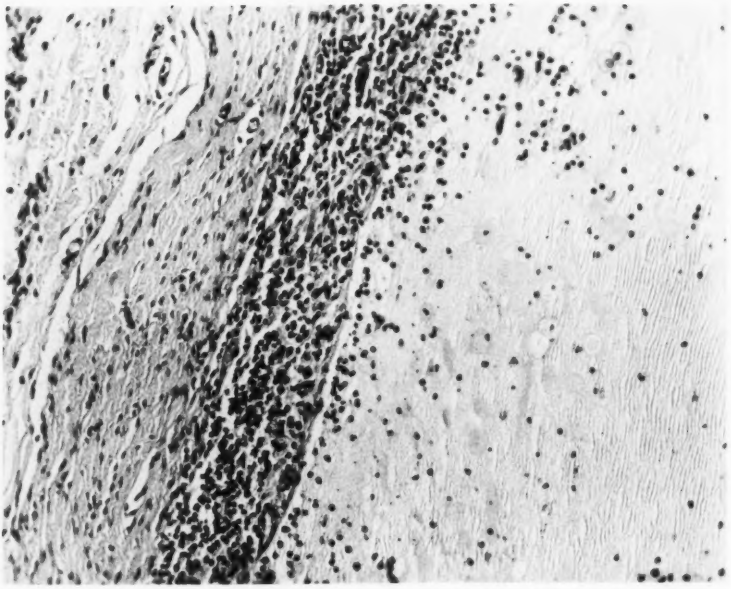

Figure 4. A section of the mucous cyst showing the fibrous wall, granulation tissue with a profusion of lymphocytes, and mucin content of the cyst. (× 160)

SUMMARY

Two cases relating to the removal of mucous cysts emphasize the necessity of considering such lesions in the differential diagnosis of growths in the oral cavity. Extreme care should be exercised when enucleating these cysts, which have a tendency to recur.

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Afibrinogenemia Resulting From Amniotic Fluid Infusion

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BERNARD M. COVALESKY, *Captain, USAF (MC)*

THE SYNDROME of amniotic fluid embolism, which usually occurs in the latter part of the first stage of labor and is manifested clinically by dyspnea, sudden shock, and death, was described by Steiner and Lushbaugh[1] in 1941. They believed the clinical picture to be due to widespread pulmonary embolization and an associated anaphylactoid reaction.

Reid, Weiner, and Roby,[2] after studying reported cases of amniotic fluid embolism, observed that the patients who survived the initial shock succumbed one to three hours after delivery. The most prominent finding in this group was the hemorrhagic manifestation; bleeding occurring from the mucous membranes, organ surfaces, and vagina. They were impressed by two unexplained observations: (1) They believed that the amount of mechanical blockage of the pulmonary vessels by amniotic debris was insufficient to be the cause of death in every instance; and (2) the blood at autopsy was liquid, and clotting of any degree was rarely seen.

After concluding that hemorrhagic tendencies play an important part in the syndrome of amniotic fluid embolism, Reid, Weiner, and Roby[2] set up studies of amniotic fluid to determine the responsible component. They found a thromboplastin-like substance which could be substituted for commercial thromboplastin in the one-stage prothrombin test. They found the concentration of thromboplastin in amniotic fluid to be determined by the degree of fetal exfoliation and hence variable from patient to patient.[2]

The presence of thromboplastin in the amniotic fluid led Weiner and Reid[3] to postulate that death in this syndrome resulted from either extensive intravascular clotting or subsequent postpartum hemorrhage. Death occurring suddenly can be explained by extensive intravascular coagulation while death occurring two to three hours after delivery is due to postpartum hemorrhage resulting from afibrinogenemia. The available circulating fibrinogen

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is rapidly used up in the formation of the intravascular clot and hence afibrinogenemia or hypofibrinogenemia results.

In order for the thromboplastin of the amniotic fluid to initiate defibrination in the maternal circulation, it must first gain entrance to that circulation. Two methods of entry have been suggested. One portal of entry is thought to be through the exposed endocervical veins which become lacerated during normal labor.[2] Rupture of the membranes early in labor may leave these veins exposed to the entrance of considerable amounts of amniotic fluid. The process is further augmented if the fetal vertex blocks the cervix, causing an increase in the intrauterine pressure. The second avenue of entry involves a rupture of the membranes somewhere in the upper segment of the uterus with eventual escape of the fluid through the uteroplacental site.

In the absence of circulating fibrinogen, clot formation at the uteroplacental site does not take place and postpartum hemorrhage occurs. Weiner and Reid[3] advised the use of "the clot observation test" to detect afibrinogenemia. Failure of freshly drawn venous blood to clot or to form a normal-sized stable clot indicates that the circulating fibrinogen has been reduced to a critical level. Also, if the clot, when incubated at 37°C, dissolved within one hour, hypofibrinogenemia was assumed to be present. Weiner and Reid[3] advocated that once the diagnosis of hypofibrinogenemia is made, fibrinogen should be administered immediately to restore the normal clotting ability of the blood.

We believe the following represents a case of afibrinogenemia resulting from amniotic fluid infusion.

CASE REPORT

A 32-year-old para 2, gravida 10, abortus 7 was admitted to this hospital at 0010 hours, 23 October 1955, at term, having moderate quality contractions with a history of leaking fluid two hours prior to admission. One hundred milligrams of Demerol (brand of meperidine hydrochloride) and 94 mg of Seconal (brand of secobarbital) were used for sedation, and a normal spontaneous delivery, under pudendal block anesthesia with 2 per cent Novocain (brand of procaine hydrochloride), followed at 0207 hours. At 0208, the placenta was expressed with the Credé maneuver. It appeared intact and complete. There was no evidence of abruption or marginal sinus rupture. The patient was returned to her room with less than 100 ml estimated blood loss at delivery. The fundus uteri was firm. No episiotomy or laceration was incurred.

One-half hour later, the patient, who was awake, called the nurse because she felt blood flow. Massage of the now soft fundus was done. It regained some, but not all, of its firmness and the tendency to again become flabby remained.

An intravenous Pitocin (brand of oxytocin) infusion was started followed by dextran at the same time that blood for typing and cross matching was drawn. It was soon evident that the vaginal blood on the bed sheets would not clot. The rate of oozing was of an ominous nature, stopping for brief periods but again recurring. It was of a dark color. The patient was returned to the delivery room and, under gas anesthesia, a vaginal examination was done. It was determined that all of the blood was coming from the fundus, which, with the exception of relaxation, was not otherwise abnormal. By this time, bleeding was more brisk and, at 0600 hours, the second transfusion of a pint of blood was started. At its completion, bleeding slowed considerably and, for the first time, a few tiny clots were seen. The estimated blood loss at this point was 2,000 ml.

At times, the pulse rose to 120 per minute, and the blood pressure dropped to 70/50 mm Hg. No other areas of hemorrhagic diathesis, oral, anal, or skin, were noted.

The patient was returned to the ward at 0710 hours in fairly good condition with a blood pressure of 105/75 mm Hg and a firm fundus. A few minutes later, she again began to ooze moderately in bed. At 0830 hours, a sample of nonoxalated blood was drawn which failed to clot. Prior to this time, inspection of blood drawn for cross matching at 0315 hours showed complete absence of clot formation. Because of these findings and the continued vaginal bleeding, transfusion of the third pint of whole blood was started and four more units were ordered. At 1100 hours, another sample of freshly drawn venous blood clotted in 15 minutes but dissolved 5 minutes later. It was then decided to administer fibrinogen intravenously and 2 grams were given at 1300 hours. Fifteen minutes later, a rather dramatic decrease in vaginal bleeding was noted. A sample of blood drawn at 1500 hours clotted in five minutes and remained clotted. Further observation revealed a stable clot with normal retraction. Since the hemoglobin level on 24 October was only 9.5 grams, an additional unit of blood was given.

On 24 October, the patient spiked a temperature to 102°F, and a diagnosis of endometritis was made. Penicillin and streptomycin were administered and 30 hours later she was afebrile and asymptomatic.

On 27 October, she was given 4 ml of gamma globulin as a preventive measure in minimizing the danger of homologous serum jaundice which may follow the use of fibrinogen.

The patient was discharged in good condition on the sixth postpartum day.

DISCUSSION

Afibrinogenemia has been reported to be associated with three different obstetrical conditions: (1) amniotic fluid infusion;[2] (2)

severe premature separation of the placenta;[4] and (3) long-standing intrauterine fetal death.[5]

In the absence of clinical signs and symptoms of abruptio placentae in our patient, the defibrinating process was probably initiated by amniotic fluid infusion. Respiratory symptoms were not a part of the clinical picture in this patient. This probably indicates a slow, prolonged infusion of amniotic fluid into the maternal circulation, being sufficient to cause defibrination but insufficient for the production of widespread pulmonary embolization. The following experimental evidence is offered to support this hypothesis: Several investigators[6-8] showed that rapid infusion of thromboplastin, intravenously, in dogs and cats produces death shortly thereafter. Slow infusion of equal amounts of thromboplastin produces defibrination of the blood but the animals survive.

Quantitative fibrinogen determinations were not available to us; however, the sudden onset of hemorrhage associated with complete absence of clot formation is offered as evidence to support our diagnosis. The cessation of vaginal bleeding and the restoration of normal clotting properties following the administration of fibrinogen also favors a diagnosis of afibrinogenemia.

Reid, Weiner, and Roby[2] stressed the importance of having on hand an available supply of fibrinogen. Inasmuch as obstetrical hemorrhage is still an important cause of maternal deaths, we believe the point deserves to be re-emphasized. Our patient was treated in an isolated station hospital, about 2,000 miles from a commercial source of fibrinogen. We were fortunate in having fibrinogen on hand, and we hope that this case report may stimulate other military hospitals to procure this important drug.

SUMMARY

A case of afibrinogenemia resulted from amniotic fluid infusion. Fibrinogen administration was important in the correction of the afibrinogenemic state.

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THE COST OF COMPLACENCY

Appendicitis was first listed as a cause of death in the vital statistics in 1892. In that year peritonitis had its greatest recent prevalence. For the next decade, the death rate from peritonitis fell and the death rate from appendicitis rose. Appendicitis killed its thousands in the first three decades of this century. After 1930 the death rate from it began to fall. After 1940 it fell almost precipitately. But the disease continued to kill its thousands. It is continuing to kill them. In 1952, 2,600 persons, an average of 217 a month, died in the United States of a disease that may not be preventable but that can be more readily cured than any other major surgical disease. Small wonder that, as an English surgeon recently wrote, acute appendicitis "is in greater need of attention than other and more publicized methods of dying."

—FREDERICK FITZHERBERT BOYCE, M. D.
in *GP*, p. 89, Jan. 1955

Immobilization of the Fractured Zygoma

JAMES E. CHIPPS, *Lieutenant Colonel, DC, USA*

THE FRACTURED zygoma, if reduced early, is often self-splinting and requires no definitive immobilization. However, the thin walls of the orbital floor and the maxillary sinus may occasionally be grossly comminuted and self-splinting cannot then be obtained. Self-splinting is also precluded when treatment has been delayed until fibrous repair has begun. More often than in other maxillofacial fractures, there is a delay in treatment of the fractured zygoma because of a delay in diagnosis. Masticatory disturbances may be minor, and an acute swelling may mask clinical evidence of displacement. The diagnosis is best made by Water's view radiographs of the mid-facial skeleton, but this particular view is usually not a part of the routine skull series obtained for the patient with a head injury.

When self-splinting is not obtained after reduction, some means of immobilization is required to prevent redisplacement of the fractured zygoma by traction from the masseter muscle.

The usual immobilization device consists of some form of attachment between fracture and a plaster headcap but this method is never entirely satisfactory. If the attachment is rigid, the fractured zygoma moves with the movements of the headcap. If the attachment is elastic, the correct amount of elastic force which provides reduction without overreduction is difficult to maintain, and any horizontal force tends to displace the headcap and induce considerable discomfort. There are several surgical procedures described for avoiding use of the headcap, none of which are desirable if more simple methods can be used.

The prominent zygoma with its arch is an obvious point for attachment of skeletal pin units for immobilization of other maxillofacial bones. Thoma[1] described such an attachment for immobilization of the fractured mandibular condyle. Archer[2] described the use of a skeletal pin unit anchored into the fractured zygoma as a means for applying traction for reduction. It, therefore, follows that one method of management is to anchor a pin unit to the fractured zygoma for application of a reducing force and, after reduction, maintain immobilization by attaching this pin

From Madigan Army Hospital, Tacoma, Wash.

unit to a second unit anchored to the unfractured zygoma of the opposite side.

This method has very likely been employed by many operators but a search of the literature at hand does not disclose that it has been specifically described. In recent cases at this hospital, the method has been so satisfactory in comparison with methods requiring headcaps or open reduction that it is reported.

CASE REPORT

A 5-year-old boy was admitted to this hospital after an automobile accident. There was an extensive infra-orbital laceration and a markedly displaced fracture of the right zygoma. The base of the fracture was severely comminuted. The laceration was repaired shortly after admission. During this procedure, several unattached bone chips were removed from the maxillary sinus.

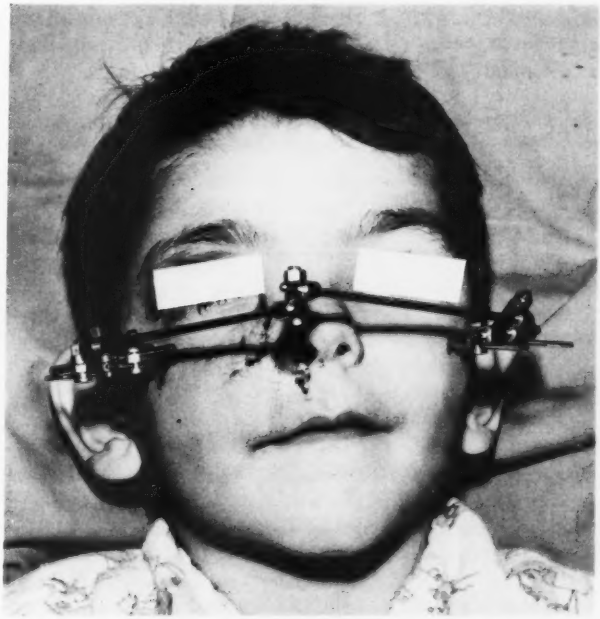

Figure 1. Reduced fracture of right zygoma immobilized to unfractured left zygoma by skeletal pin units and connecting bars.

The following morning, under general anesthesia, a skeletal pin unit was anchored into the fractured zygoma and used as a handle for obtaining reduction. However, because of comminution and loss of bone substance, redisplacement occurred each time manual traction was

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released. A second pin unit was then anchored to the unfractured left zygoma, the fracture was again reduced, and the two units were rigidly joined by connecting bars (fig. 1).

There were no complications, and after two weeks the pin units were removed without anesthesia. During this period, the patient had no complaints associated with use of the appliance.

SUMMARY

Comminution and delay in treatment prevent self-splinting of the reduced zygoma on occasion. Delay in treatment because of a delay in diagnosis should not occur if the Water's view radiograph, the best view for disclosing injuries of the mid-facial skeleton, is included routinely in the initial examination of the patient with a head injury.

When required, immobilization of the fractured zygoma can be readily obtained by attaching it by pin units to the opposite unfractured zygoma. This method has proved completely satisfactory in recent cases.

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MEDICAL MEETING

The Society of Military Ophthalmologists and the Society of Military Otolaryngologists will hold a joint dinner and business meeting at the time of the Annual Meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago on 16 October. All members are invited to attend. Application may be made to either Captain James A. Stokes, MC, USA, Walter Reed Army Hospital, Washington 12, D. C., or to Major Stanley H. Bear, USAF (MC), 3810th U. S. Air Force Hospital, Maxwell Air Force Base, Ala.

Primary Carcinoma of the Fallopian Tube

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PRIMARY carcinoma of the fallopian tube is one of the rarest of all malignancies,[1] and only about 530 cases are described in the literature. Wharton and Krock[2] reported 5 such carcinomas in 35,000 gynecologic cases at Johns Hopkins Hospital, and Hu, Taymor, and Hertig[3] found 12 in 3,878 primary malignant lesions of the female genital tract at Free Hospital for Women in Brookline, Mass., an incidence of 0.31 per cent. In one third of all the cases reported, the carcinoma has been found in both tubes.[4,5] This lesion is peculiar in the fact that it is frequently associated with tuberculosis of the fallopian tube. It usually occurs in the middle or outer third.[2]

Primary carcinoma of the fallopian tube is one of the most malignant of all lesions. About one fourth of the cases in the literature have shown a recurrence in one year.[5] Haupt[6] reported that only 6 patients out of 321 cases he received survived for 8 years. This type of carcinoma usually metastasizes to the presacral areas by the retroperitoneal route; to the abdomen, ovary, mesenteric peritoneum, inguinal nodes, liver, lungs, stomach, bladder, skin, and supraclavicular nodes; as well as to the uterine cavity.[5] Even the vagina is often invaded. Where the ends of the fallopian tubes have remained open, metastases into the uterine or abdominal cavities usually occur by spill.[4] Other metastases may take place through the lymphatic and vascular systems.[7]

The carcinoma arises from the mucous membrane of the tube and seldom invades the tubal wall. It usually causes the formation of a hydrosalpinx[4] and produces various signs and symptoms of inflammation of the fallopian tube. On opening the tube, the center of the tumor is found to be filled with a thickened papillary mass that is friable, hemorrhagic, and in some areas necrotic growing on a fibrous groundwork with connective tissue septa throughout.[4] These are classed as papillary and papillary alveolar due to their growth;[8] however, at times, one is classified as an

From U. S. Naval Hospital, Memphis, Tenn.

adenocarcinoma because of its glandlike structure. This latter classification is frequently used by the Armed Forces Institute of Pathology, although, according to the majority of the literature, it is incorrect in that there are no glands present in the fallopian tubes.[9]

This particular type of lesion is seldom diagnosed prior to operation, and even then is often missed because the tube is not opened and examined thoroughly. A few reported cases were diagnosed by the Papanicolaou test before operation.[10] Whenever there is a serous or serosanguineous vaginal discharge resulting in the relief of lower abdominal pain, an extra-uterine carcinoma should be suspected, especially after dilatation and curettage has shown the endometrium to be normal.[11] The symptoms that usually bring these patients to the physician are (1) low abdominal pain,[5] varying in character from cramplike to sharp and lancing and referred to the sacrum, bladder, rectum, and down one or the other leg; (2) abdominal enlargement, or (3) a vaginal discharge which is frequently blood-tinged.[1,12] These lesions, especially where there is abdominal enlargement, are frequently confused with uterine myomas, ovarian cysts, and salpingitis.[1] Most patients with primary carcinoma of the fallopian tube are in the menopausal period, although the age of patients has been reported as ranging from 18 to 80 years, the average being 49.5.[13,14] In 70 per cent of all cases reported, the women have been nulliparae. For this reason the condition is thought to be closely associated in some way with sterility.[15]

The treatment of choice is bilateral salpingo-oophorectomy with panhysterectomy.[1] Deep x-ray therapy has been advocated for the majority of cases as a follow-up to the surgical procedure, although the probable benefits are doubtful.[1,4]

The case reported here is of particular interest in that the patient came to the clinic complaining of backache and was found to have a retroverted uterus. She did not complain of anything that was in any way connected with the carcinoma, and because of the position of the uterus, was operated on to relieve her backache. The carcinoma was found accidentally on operation, at which time it had extended from the tube to the ovary.

CASE REPORT

A 36-year-old, well-developed, well-nourished para 1, gravida 1 was seen in the outpatient clinic of this hospital on 22 July 1954, complaining of a profuse discharge of a bloody type following the normal menstrual period. This discharge lasted for two days.

On examination, the cervix showed evidence of chronic cystic cervicitis and the uterus was 3 degrees retroverted and it could not be replaced at that time. A Papanicolaou smear taken at this time was reported as negative. The patient was instructed to take hot vinegar

douches and was told to return at a later date. She was again seen 3 December, at which time the cervix was clean and the uterus still retroverted. She had no further complaints at this time.

On 4 January 1955, the patient came in complaining of vaginal bleeding following intercourse on the last two occasions. The last menstrual period was normal and she was running a 27- to 28-day cycle. The uterus at this time was still found to be 3 degrees retroverted and was thought to be somewhat enlarged. There was one Nabothian cyst on the anterior lip of the cervix; another cyst, also on the anterior lip, had ruptured with slight bleeding. Another Papanicolaou smear taken at this time was also reported as negative. On 14 January, silver nitrate was applied to the cervix and an attempt to elevate the fundus was unsuccessful. The patient returned 31 January 1955, with backache radiating down both legs of one month's duration. Also during this month she had had spotting of slight degree, off and on. Examination revealed slight cervicitis, and the uterus was still retroverted. A pessary was inserted and the patient was instructed to take hot vinegar douches and knee chest exercise, and dilatation and curettage was advised if the spotting continued. She returned 14 February, complaining only of occasional back pain radiating down her leg. She reported to the clinic 14 March 1955, complaining of spotting off and on. The backache and the leg pains had been relieved by the pessary.

On 21 April 1955 dilatation and curettage and a laparotomy for a uterine suspension, previously scheduled for 7 April but postponed because of an upper respiratory infection, were performed. A lesion, thought to be a hydrosalpinx, was found in the area of the left tube; and between the distal and middle third of the left tube, two areas of a tumor formation were found on the serosal surface. The left tube was removed and on frozen section an adenocarcinoma of the tube was diagnosed. At operation no lymph nodes or extension of the tumor could be seen or palpated. A wide bilateral salpingo-oophorectomy and hysterectomy were performed. The pathologic diagnosis was secretory endometrium; primary carcinoma of the left tube, Grade IV (fig. 1). Uterine myomata and chronic salpingitis and chronic cervicitis were also found on pathologic examination. She had an uneventful postoperative course and was discharged on the eighth postoperative day. She was sent to another naval hospital where between 8 May and 22 June she received 3,728 r tumor units of deep x-ray therapy through two anterior and two posterior areas. The post x-ray therapy period was uneventful.

The patient was again seen in the outpatient clinic of this hospital on 11 July, at which time the abdominal incision was found to be well-healed and there was some induration in the vaginal vault area with slight tenderness and a small granulomatous area in the vagina. This latter was treated with silver nitrate solution. She returned 1 August, at which time the vaginal vault was negative except for some

induration and the suspicion of a small, firm mass in the cul-de-sac, over which the vaginal vault and vagina moved freely. She was seen on 10 October 1955 with a large, firm, irregular mass in the pelvis which extended up to the iliac crest and filled most of the pelvis. This mass was fixed. The liver edge was palpated two fingersbreadth below the right costal margin. A roentgenogram of the chest at this time showed a slight elevation of the right hemidiaphragm with fluid or thickened pleura with blunting of the right costophrenic sulcus.

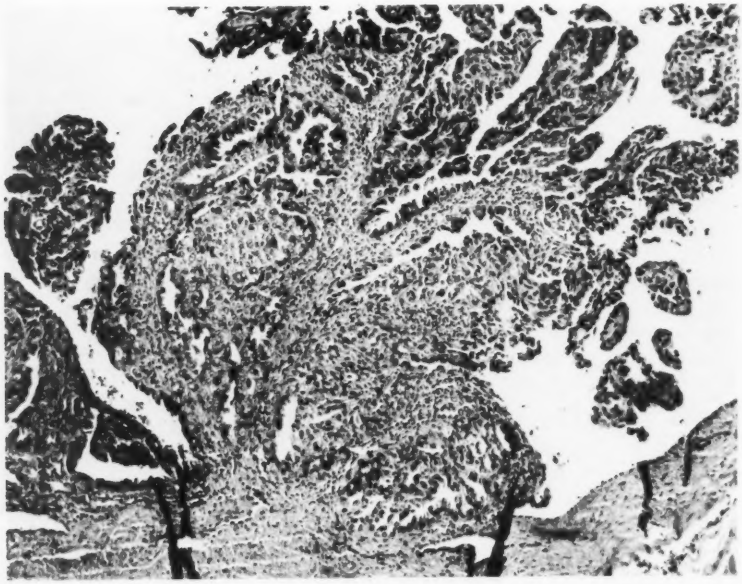

Figure 1. Primary tumor arising from tubal wall showing the papillary pattern and atypical cytologic findings.

On 8 November 1955, the patient again returned to the clinic, complaining of severe abdominal and right subcostal pain which radiated to the right shoulder and down the right arm; increasing constipation; and distention of the abdomen. There was marked tenderness over the entire abdomen, especially below the right ribs. The mass was palpable in the pelvis, but abdominally could not be palpated, nor could the liver at this time be palpated due to the distention and marked tenderness of the abdomen. A roentgenogram taken at this time showed that the lower two thirds of the right lung were completely obscured by pleural effusion and underlying consolidation (fig. 2). The pleural effusion extended up along the anterior lateral wall almost to the apex. The consolidation was suggestive of metastatic disease. The patient was admitted to the hospital. Abdominal distention increased,

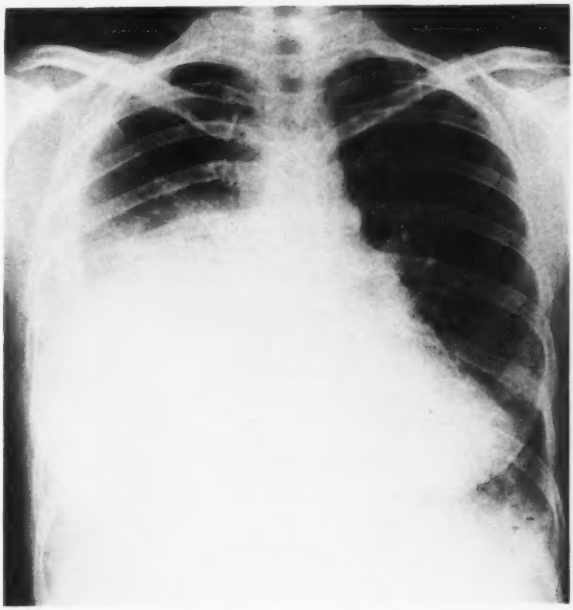

Figure 2. In the roentgenogram of 8 November 1955 the lower two thirds of the right lung was completely obscured by pleural effusion and underlying consolidation and was suggestive of metastatic disease.

as did the pain and tenderness in the abdomen and the right scapular areas. This was accompanied by constipation and vomiting.

On 1 December the right thoracic cavity was tapped and 1,000 ml of straw-colored fluid was removed. The following day 1,200 ml was removed from the left thoracic cavity. On 3 December, paracentesis was performed and 3,200 ml of straw-colored, cloudy fluid was removed from the abdominal cavity. Following the aspiration of fluid from the chest and abdomen, the patient received considerable relief from the dyspnea which had previously developed. She became rapidly cachectic and gray in color, and her general condition much weaker. A roentgenogram on 9 December showed chronic consolidation of the right upper lobe with increased pleural effusion of the right side of the chest with infiltration of the left base (fig. 3). The patient's condition became rapidly worse and she died 8 January 1956.

Pathologist's Report. The primary tumor appeared as a solitary 1.5-cm nodule on the left fallopian tube at the junction of the middle and distal thirds. This tube was slightly dilated and on cut section the lumen was filled with friable grayish white tissue continuous with the nodule described externally. Microscopic examination of the entire hysterectomy

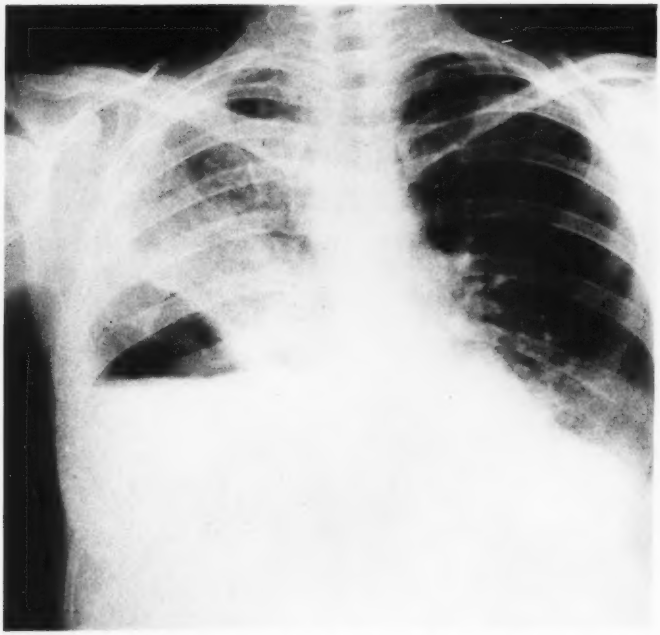

Figure 3. The roentgenogram of 9 December showing chronic consolidation of the right upper lobe with increased pleural effusion of the right side of the chest and infiltration of the left base.

specimen revealed that the tumor also involved the left ovary, but the uterus and the right adnexa were free of tumor. The diagnosis was papillary adenocarcinoma of the left fallopian tube.

Autopsy. The abdomen was markedly distended and nodules were palpable in the soft tissues over the right anterior chest wall. The body cavities contained approximately 3,000 ml of fluid. There was a complete atelectasis of the right lower lobe of the lung. The visceral and parietal pleura and peritoneum were diffusely infiltrated with tumor, and metastases were found in the lungs, hilar and mediastinal lymph nodes (fig. 4), liver (fig. 5), spleen, adrenals, and para-aortic lymph nodes. The intestines were matted together into a large mass by tumor tissue extending from the pelvis. No metastases to the brain were found. The subcutaneous nodules in the right chest wall were masses of tumor tissue extending from the underlying pleura.

Microscopic examination revealed the tumor to show a papillary tendency; mitoses were quite numerous. The spread was primarily lymphangitic but blood-borne metastases were demonstrated in the lungs. These were believed to be the result of tumor emboli entering the venous system via the thoracic duct (fig. 6).

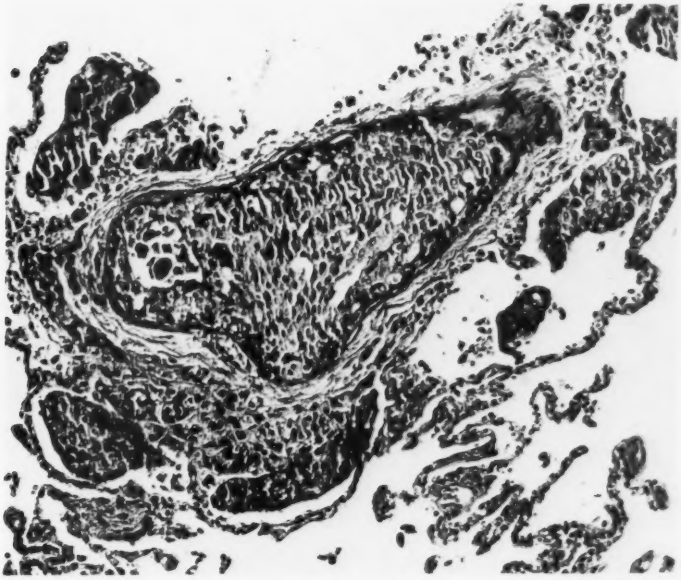

Figure 4. Pulmonary vein completely thrombosed by tumor and masses of tumor cells within the perivascular lymphatics.

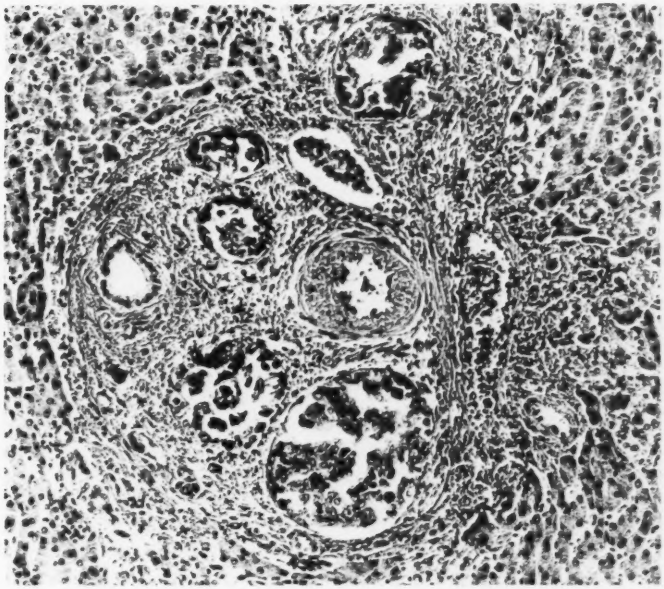

Figure 5. Portal space of liver showing tumor cells within lymphatics.

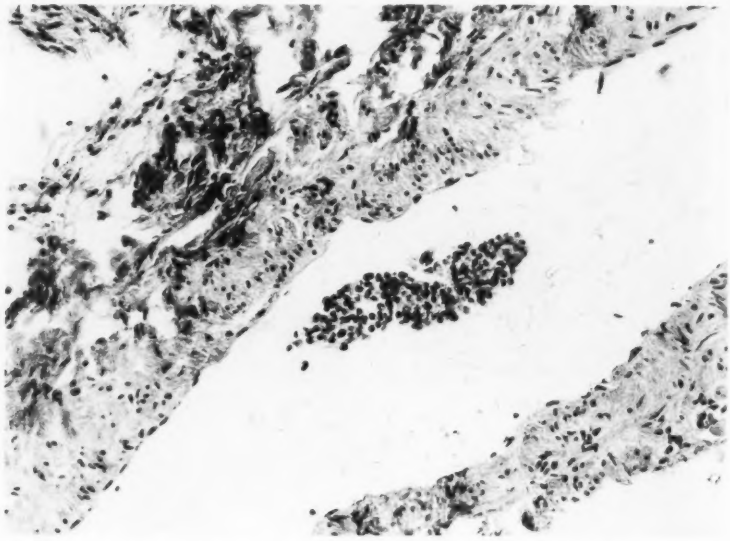

Figure 6. Embolus of tumor cells within the thoracic duct.

SUMMARY AND CONCLUSIONS

Primary carcinoma of the fallopian tube, one of the rarest of all cancers and one of the most malignant, is seldom diagnosed before operation or autopsy. The treatment of choice is bilateral salpingo-oophorectomy and wide panhysterectomy. Deep x-ray therapy is advocated to follow the operation, but its value is doubtful.

The case reported is particularly interesting because except for slight spotting the patient had none of the signs or symptoms usually associated with this condition, and was operated on primarily because of backache thought to be caused by a retroversion of the uterus.

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NUTRITION OF THE FUTURE

"It would be rash, indeed, to make predictions of what new discoveries science may bring to nutrition in the next 5 or 10 years. My concern is that we are not applying the things that are already known. But there are three directions that seem likely to me.

"I think that the vitamin craze is just about over, and that new emphasis will be put on proteins and on minerals. It is not yet clear that all benefits of proteins derive simply from the amino acid components, but possibly another 5 years will clear up this important point. The idea of balance in the diet, which is an old one, will receive more and more attention.

"In Food Technology there have been amazing changes in recent years and we can expect many more. Most of these provide foods in some more convenient form and this is likely to be the dominating consideration rather than good nutrition. In fact, there is a constant and continuing threat to good nutrition in many technological developments, but I find it encouraging that many food companies as well as many people are conscious of this threat. The problem lies in trying to get the information we need to answer the questions raised by each technological change. These developments in technology all cost money and the cost of food must therefore tend upwards."

—L. B. PETT, M. D.
in *Canadian Services Medical Journal*, p. 199, Mar. 1956

Cholecystitis, Septicemia, and Cystitis Due to Klebsiella Pneumoniae

RICHARD F. HUCK, *Captain, MC, USA*

THE PATHOGENESIS of acute cholecystitis is primarily dependent on obstruction of the gall bladder, with subsequent inflammation due to chemical irritation by the concentrated bile salts. The role of bacteria in producing cholecystitis is undoubtedly secondary.[1] I wish to report a case of empyema of the gall bladder in which *Klebsiella pneumoniae* (Friedländer's bacillus) was isolated from the patient's urinary bladder, blood stream, and gall bladder, and to call attention again to the fact that infections of the biliary tract with the Friedländer organism are not uncommon, particularly if a primary focus of infection is present—in this instance, the genitourinary tract.

CASE REPORT

A 55-year-old man was admitted to this hospital in June 1955 complaining of chills, fever, right lower chest pain, and right upper abdominal pain of two weeks' duration. He had felt well until about April, when he first noted gradual loss of weight, and during the three months prior to admission he had been troubled by increasing weakness, loss of appetite, and a general feeling of being unwell. For about three days before admission, there was increasingly severe, constant pain in the right lower chest and right hypochondrium. The pain was increased on inspiration, and was so severe that it kept him awake at night. There was no history of jaundice, nausea, or vomiting. The patient did not complain of any symptoms referable to the urinary tract. He had a chronic productive cough which seemed to be a little more severe during the few days prior to admission.

The past history was significant in that the patient required a transurethral subtotal prostatectomy in 1946 for chronic bladder obstruction; subsequently, he had no difficulty in urinating.

Physical Examination on Admission. The patient was a well-developed, rather poorly nourished, chronically ill man in acute distress. His temperature was 103°F; pulse, 100; and blood pressure, 130/80 mm Hg. His scleras seemed to be somewhat icteric. A few transient coarse rales were heard in the right lower lung field, and the right upper quadrant of

From U. S. Army Hospital, Fort Campbell, Ky.

his abdomen was tender with some voluntary guarding. A mass was felt occupying almost the entire right upper quadrant. This was soft and exquisitely tender to touch. The rest of the physical examination was not revealing.

Laboratory Findings. The white blood cell count was 23,000 per μl with a differential of 83 per cent mature neutrophils and 17 per cent lymphocytes. The red blood cells numbered 5,000,000 per μl and hemoglobin was 12 g per 100 ml. Grossly, the urine appeared cloudy. Urinalysis showed a specific gravity of 1.017, a trace of albumin, 0-2 finely granular casts per high power field, and an occasional red cell; white blood cells were too numerous to count in random fields. The serologic reaction for syphilis was negative. Blood urea nitrogen was 19.4 mg per 100 ml; total protein, 5.71 g; albumin, 2.95 g; and globulin, 2.76 g per 100 ml. Alkaline phosphatase was 1.15 Bodansky units per 100 ml; thymol turbidity, 7.5 units; cephalin-cholesterol flocculation, 2 plus in 48 hours. A catheterized urine culture revealed *K. pneumoniae* and *Escherichia coli*. A blood culture showed *K. pneumoniae*, and sensitivity studies indicated that the organism was inhibited by Chloromycetin (brand of chloramphenicol) but showed no sensitivity to streptomycin sulfate, Terramycin (brand of oxytetracycline), penicillin, or bacitracin, and poor sensitivity to chlortetracycline hydrochloride (aureomycin). The strain of *Klebsiella* isolated from his urine demonstrated the same sensitivities. A sputum culture grew coagulase-negative *Micrococcus pyogenes* var. *aureus*.

Roentgenographic Findings. A roentgenogram of the chest was essentially noncontributory. A cholecystogram failed to show the gall bladder but on fluoroscopic examination, a mass, thought to be an enlarged gall bladder, was observed.

Course in Hospital. Although the results of the bacteriological studies were not known at the time, the patient was immediately placed on chlortetracycline hydrochloride, 500 mg initially and then 250 mg four times a day, and given Demerol (brand of meperidine hydrochloride) as needed for his discomfort. A residual urine determination revealed only 33 ml of urine.

During the first week of hospitalization, the patient subjectively improved on chlortetracycline hydrochloride therapy, but his temperature continued to spike, ranging from 100° to 100.8°F. This continued well into the second week of hospitalization. Ten days after the patient's admission to the hospital the culture reports were returned with the results noted above. By this time he had clinically improved to such extent that his white blood cell count had dropped from 18,000 per μl on the fifth day of admission to normal two days later.

The patient continued to improve, and on 11 July an exploratory laparotomy was performed at which time it was found that the gall bladder had been isolated by a large mass of omentum that was firmly adherent to the upper surface of the liver. A large gall bladder was

exposed which contained approximately 300 ml of purulent liquid and many small and large stones. The common duct was dilated, and aspiration revealed a small amount of bile but no calculi. Further exploration of the common duct revealed no other abnormalities. Because of the edema in the area of the junction of the cystic and common ducts, a cholecystostomy was performed, with removal of all of the stones. The gall bladder was irrigated thoroughly and a large mushroom catheter was sutured into it. Culture of the bile revealed *K. pneumoniae* sensitive to Chloromycetin. A postoperative cholangiogram demonstrated the contrasting material to pass freely through the external catheter and the T tube, filling the gall bladder and biliary duct system. The contrast material entered the proximate loops of the duodenum without any difficulty, indicating no obstruction or stones to be present.

The patient did well postoperatively and was discharged from the hospital on 21 July to return at a later date for cholecystectomy. He was readmitted in acute distress on 30 July, complaining of chills and fever and of severe pain in the right upper quadrant. It was believed that the T tube, which had been left in situ, had become obstructed and there was not adequate drainage of bile, resulting in recurrence of his acute cholecystitis. Chloromycetin was reinstituted, and drainage through the tube was re-established.

The patient responded well to treatment, and six weeks after admission to the hospital, the old incision was opened, the gall bladder removed without difficulty, and the common duct explored. No stones were found in the common duct and the T tube was placed in it. Ten days postoperatively the T tube was removed, after cholangiography had revealed a normal appearing common duct. Slight dehiscence of the operative wound developed, probably secondary to an infection, but this healed rapidly. The patient has been followed during the past eight months in the outpatient clinic. He is feeling well and has regained his weight and strength.

DISCUSSION

Baehr, Shwartzman, and Greenspan,[2] in reviewing 198 cases of infections due to Friedländer's bacillus reported over a 75-year period, contradicted the idea that the organism affects primarily the respiratory tract. They found that respiratory tract and lung infections actually were of less common occurrence than were gastro-intestinal infections. Furthermore, they pointed out that many strains of *Klebsiella* organisms form acid and gas in the identical sugar media that *Esch. coli* strains do; thus, a capsule stain is frequently indicated to differentiate the two. They found that infection of the gall bladder or biliary passage due to Friedländer's bacillus occurred without any obvious predisposing cause in only 6 of 43 patients with cholecystitis and cholangitis.

The occurrence of cholangitis, pylephlebitis, and liver abscesses secondary to infection of the gall bladder accounted for 30 per cent of the deaths. Bacteremia occurred as frequently from infection of the gastro-intestinal tract as from that of the urinary tract.

It is well known that the clinical response of a given patient to an antibiotic may not correlate well with the in vitro sensitivity of the isolated organism to different concentrations of the various therapeutic agents. Our patient responded well to chlortetracycline hydrochloride clinically, although the laboratory reported poor sensitivity of the strain in question to this antibiotic in vitro. Hall[3] demonstrated that chlortetracycline hydrochloride is found in the bile in high concentration—8 to 16 times the corresponding serum concentration; this happy circumstance may account in part for our patient's improvement. With respect to Chloromycetin, Gruhzit and co-workers[4] found that it entered the gall bladder in significant concentrations, a fact of clinical importance in treating patients with acute infections of the gall bladder prior to surgical intervention when the complicating organism is not known.

Cabelli and Goldberg[5] in purely in vitro sensitivity studies of the various *Klebsiella pneumoniae* strains, noted a definite correlation between a given strain's ability to ferment lactose and its general resistance to antibiotics. Neomycin and polymixin B were most effective in inhibiting the various strains of the organism, but because of the poor absorption of neomycin[6] and the toxicity of polymixin B, neither of these drugs would have been of practical value in management of the patient described above.

The statement of Bell[7] regarding the specific therapy of meningitis due to Friedländer's bacillus is applicable to empyema of the gall bladder and septicemia due to the same organism; namely, that no one antibiotic or combination of antibiotics is uniformly effective. In addition, it must be emphasized that surgical intervention and drainage or removal of the focus of infection is necessary for complete eradication of the disease.

SUMMARY

A case of empyema of the gall bladder, septicemia, and chronic cystitis due to *Klebsiella pneumoniae* (Friedländer's bacillus) is presented. Review of the literature reveals two interesting findings: (1) That cholecystitis caused by *K. pneumoniae* may not be a rare occurrence, particularly if the gall bladder is already diseased and a chronic Friedländer's infection is present elsewhere, and (2) that no single antibiotic is uniformly effective against this organism. For complete cure, surgical drainage or removal of the focus of infection is indicated.

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EDUCATION vs INSTRUCTION

"In the kind of teaching we give in universities, a distinction may properly be drawn between the processes of education and instruction. In education, the student is encouraged to work and think for himself; the function of the teacher is to stimulate and criticize. Education is expensive in time and effort of both teachers and pupils. But it produces the most finely trained minds. By contrast, instruction is a process whereby the student is required to assimilate a series of dicta, without inquiring into their validity or necessarily considering the evidence on which they are based. It is a process which does not necessarily improve the mind of the recipient, and may actually do harm by suppressing curiosity, insight, and the capacity to learn from experience."

—GEORGE W. PICKERING, M. D.
in *Annals of Internal Medicine*
p. 924, Nov. 1955

Essential Renal Hematuria

MAYNARD A. MESERVEY, *Lieutenant, MC, USNR*
LOUIS J. SCORDAMAGLIA, *Lieutenant, MC, USNR*

IN REVIEWING case reports on essential renal hematuria, one is impressed by the large percentage of these which, on pathologic study, show the bleeding to be coming from venous anomalies or angiomas of the renal pyramids. Strictly speaking the term "essential" should not be used in any case where the cause of bleeding is discovered, but through common usage it is applied to obscure cases of hematuria that may eventually be shown to have arisen from a specific lesion. Webb-Johnson and Warwick[1] believed that bleeding from one kidney in the absence of evidence of nephritis is almost invariably due to angiomas of the pyramids, and condemned use of the term "essential" in these cases. McKay, Baird, and Lynch[2] stated that angiomas or varices are frequently found in the presence of severe interstitial pyelonephritis, and suggested that these may be due to inflammation and fibrosis with impairment of venous return. They proposed that the term "hamartoma" be used for these vascular tumors. Bobbitt, Hoffman, and Werthammer[3] listed three possible causes for "essential" hematuria: (1) acute or chronic inflammatory, (2) fibrotic, and (3) vascular. They cited two cases in which varices of the renal pyramids were thought to be due to a congenital weakness of the vessels as there was no evidence of fibrosis or nephritis.

Priestley and Wilbur,[4] in a study of essential hematuria, noted changes in the renal pyramids of all 10 kidneys examined histologically. The findings consisted of vascular changes in which the pyramidal veins showed marked congestion, often with associated hemorrhage; both acute and chronic inflammatory changes; and in the late stages, fibrosis. Recently MacMahon and Latorraca[5] reported three cases of "essential" hematuria due to a lesion until then incompletely described. They noted direct communicating channels between pericalyceal venous sinuses, and the minor calyces of the collecting system of kidneys which were otherwise normal, and in which no other possible cause for bleeding could be demonstrated. Nephrectomy was performed on each of these patients as a lifesaving measure, and in each case it had been the first bleeding episode. To the latter is attributed the clear histologic picture without inflammation or reactive fibrosis.

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MacMahon and Latorraca believed that hemorrhage of the degree noted in these cases cannot be readily explained by capillary bleeding or diapedesis, but must indicate the rupture of a larger vessel.

A case has recently been observed by us which, because of its similarity to those reported by MacMahon and Latorraca and because of the scarcity of other such cases in the literature, is herein reported.

CASE REPORT

A 69-year-old woman entered the hospital because of painless, gross hematuria of three days' duration. There was no history of trauma or lower urinary tract symptoms. Physical examination was normal except for an iridectomy scar of the right eye and absence of the left breast which the patient said had been removed 25 years previously because of cancer. Blood pressure, pulse, and temperature were normal on admission. Urinalysis showed a specific gravity of 1.014; acid reaction; albumin, 15 mg per 100 ml (one specimen) and no glucosuria. Hemoglobin was 14.5 g per 100 ml; the white blood cell count was 6,500 per μl with 54 per cent neutrophils, 41 per cent lymphocytes, and 5 per cent eosinophils. Sedimentation rate (Cutler) was 4 mm/hr. Platelet count was 389,450 per μl; bleeding time (Duke), 3 min 30 sec; coagulation time (Lee and White), 3 min 40 sec. Prothrombin time was 80 per cent of normal. The Kahn test was negative. A roentgenogram of the chest and an electrocardiogram were normal. Intravenous pyelograms were unsatisfactory due to poor visualization of right collecting system. Retrograde cystography disclosed blood spurting from right urethral orifice. Retrograde roentgenograms showed a normal left kidney collecting system. The outline of the right kidney was normal but there was an irregular filling defect involving the lower calyx (fig. 1). During the hospital course the gross hematuria lessened to a pink tinge. Because of the history and roentgenographic findings suggestive of neoplasm, a right nephrectomy was performed. The postoperative course was uneventful.

Pathologist's Report. The specimen consisted of a symmetrical kidney weighing 135 grams with the renal pelvis and 8 cm of attached ureter. There were no capsular adhesions and the cortical surface was smooth. When the specimen was bisected, the pelvic mucosa was noted to be diffusely congested and there were small blood clots loosely adherent to the mucosal surface. Multiple parallel sections perpendicular to the capsular surface and at 3-mm intervals were made. One of these cuts chanced to pass through a small hemorrhagic zone adjacent to a papilla. Histologically a section of this area showed a direct communication between the fornix of a minor calyx and an adjacent pericalyceal venous sinus. A blood clot showing early organization with fibroblastic and capillary ingrowth from the vessel wall extended a short distance into the fornix at this point (fig. 2). In the perivascular

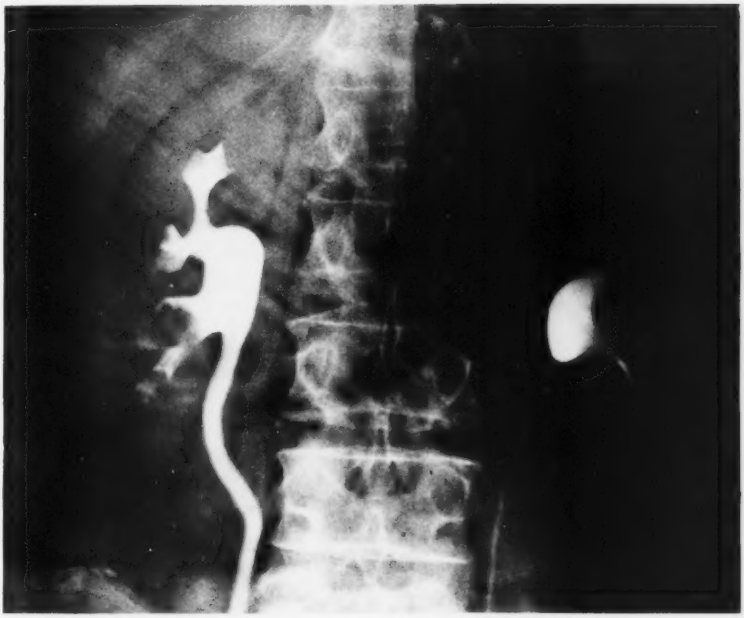

Figure 1. Retrograde pyelogram showing filling defect of lower calyx of right kidney.

tissue there was a striking degree of fresh hemorrhage accounting for the submucosal congestion of the pelvis noted in the gross examination. A slight infiltration of neutrophils and lymphocytes was noted in the hemorrhagic area, but there was no evidence of inflammation or fibrosis elsewhere in the kidney. There was no tumor, and all other sections of the kidney were remarkably normal.

DISCUSSION

This case differs from those reported by MacMahon and Latorraca only in the finding of a blood clot within the communicating channel between vessel and collecting system. This is presumed to be the result of the usual clotting mechanisms, and in the absence of abnormal coagulation factors or demonstrable vascular changes cannot be considered otherwise. Furthermore, it is entirely possible that the blood clot formed in situ might have in time completely arrested the hemorrhage and permitted healing to ensue. Perhaps other cases of hematuria, transitory in nature and subsiding without surgical intervention, may have done so by this means.

In retrospect it is difficult to see how this case could have been handled differently. Indications for nephrectomy, even

Figure 2. Photomicrograph showing the connecting channel between a minor calyx and a pericalyceal sinus. Note the organizing blood clot extending into the calyx. (× 50)

though the preoperative diagnosis was incorrect, were subsequently proved to be valid. The factor initiating hemorrhage in these cases still remains obscure. We can only reiterate MacMahon and Latorraca's statement, "In the absence of these (tumor, stone, or inflammatory erosions), simple anatomical relationships and physiological variants in pressure could initiate massive, recurrent hematuria."

SUMMARY

Another case of obscure hematuria has been explained by the demonstration of a communicating channel between a pericalyceal venous sinus and a minor calyx of the urine collecting system.

In this case, unlike others previously reported, there is a thrombus partially occluding this channel. The possibility is raised that the thrombus might have eventually arrested the hemorrhage, and it is believed that thrombus formation in such lesions may in some cases account for the spontaneous remission of transitory, undiagnosed hematuria.

It is to be hoped that kidneys removed surgically for obscure hematuria will be most carefully examined with the foregoing lesion in mind before they are diagnosed as normal. The frequency of this finding will undoubtedly be in direct relation to the awareness of it.

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TIME TO THINK

"In more general terms, the medical curriculum should be like a well-ordered atom; aside from a compact and weighty nucleus, it should consist largely of space.

"The most precious quantities that we can give our students are the time and the freedom to develop as human beings and as physicians. It will be assumed that the time is free only in the sense that it will be unassigned. It will be available for thinking and reading, not simply the latest texts, but Darwin, or Proust, or the Bible, or the new journals; or for advanced elective work; or for the pursuit of a special interest in the laboratory. The medical school should fit a description quite the opposite of that which has been quoted for the old proprietary schools: the student should see even more than he hears, and, above all, he should do everything."

—AVERILL A. LIEBOW, M. D.
in *British Medical Journal*
p. 307, Feb. 11, 1956

CITATION PRAISES LT. COL. McDOWELL

Lieutenant Colonel Marion E. McDowell, MC, USA, formerly director of the Division of Medicine at the Walter Reed Army Institute of Research, Walter Reed Army Medical Center, Washington, D. C., has been awarded a Certificate of Achievement for his ". . . outstanding record of service well rendered" to his country. Signed by Major General Leonard D. Heaton, Commanding General of Walter Reed Army Medical Center, the citation praised Colonel McDowell for his contributions in Korea "to the understanding of the complex problems of shock and renal failure in hemorrhagic fever" as well as for his "steadfast devotion to duty at Walter Reed Army Medical Center."Brigadier General John R. Wood, director of the Institute, presented the citation to Colonel McDowell at Center Headquarters on 2 July 1956. Colonel McDowell's next assignment will be at the Tokyo Army Hospital.

Lt. Col. Marion E. McDowell, MC, USA (left) receives a citation from Brig. Gen. John R. Wood, Commandant of the Walter Reed Army Institute of Research. Col. McDowell, former Director of the Division of Medicine at the Institute, left Walter Reed on 10 July 1956 for duty at Tokyo Army Hospital.

A 1942 graduate of the University of Wyoming, Colonel McDowell received his Doctor of Medicine degree in 1945 from the University of Rochester School of Medicine. He entered the service in 1943 and in 1952 served in Korea with a medical research team.

Colonel McDowell is a member of Phi Beta Kappa, an associate member of the American College of Physicians, a member of the American Medical Association and the American Federation for Clinical Research, and certified by the American Board of Internal Medicine.

A MESSAGE FROM THE A. M. A.

The "message" this month is devoted to the A. M. A. Public Relations Department. Within the past 10 years the American Medical Association has taken on a new look. The changes, reflected in a more dynamic organizational "personality," stem from new concepts of thinking within the Association.

The Association's Public Relations Department, whose director serves as assistant to the Secretary-General Manager, has been charged with the implementation of a program designed to clear away misunderstandings about doctors, to right any actual wrongs within the profession, and to foster the friendship and support of the American people. There are three keynotes to departmental activities: (1) evaluation of all developments in the medical world, scientific as well as socio-economic; (2) education-of both public and profession in regard to these developments as well as in regard to the values of our present medical care system and ways to improve it; and (3) action to eliminate areas of misunderstanding and pave the way for improved medical service. Some of the department's specific activities include:

Press relations. Each week a new release based on stories in the *Journal of the American Medical Association* or in special journals is issued to newspapers, magazines, and radio and television stations around the country. In advance of the A. M. A.'s two large scientific meetings each year, dozens of releases based on abstracts of scientific papers are prepared, and during the meeting itself two press rooms are maintained to service the more than 100 reporters who attend. Throughout the year special coverage is given to various meetings of A. M. A. councils and committees, and special articles are prepared for trade journals and related publications. In addition to providing a steady flow of scientific information, the press relations section publicizes organized medicine's policies on national legislation and other medical issues of public concern.

Magazine relations. Since almost 500 medical articles a year appear in nationally circulated magazines, the department offers a special review and consultation service to editors and writers to insure accuracy of articles that appear. A weekly *J. A. M. A.* column is prepared which summarizes current magazine articles of medical interest and also reports on medical TV shows.

From the Council on National Defense of the American Medical Association. The views and opinions expressed are not necessarily those of the Department of Defense. —*Editor*

Television and films. In the last two years, two TV films were prepared by the A. M. A.—"A Life to Save," pointing out the dangers of medical quackery, and "Operation Herbert," discussing medical costs. Currently another film is in production. This will highlight the values of the art of medicine. Other films, many produced in co-operation with the A. M. A., are widely publicized by the Association. Just recently a Physicians' Advisory Committee for Television, Radio, and Motion Pictures operating on the west coast, and another operating on the east coast, were set up to serve producers and writers of shows on medical subjects.

Literature. During 1955 the Department distributed nearly a million and a half pamphlets, reprints, and similar literature for public consumption. These pieces were generally "educational," pointing out the importance of getting a family doctor, giving the facts on medical education today, explaining the Association's legislative stands, and covering many other significant subjects. The newest publication is one on mechanical quackery, prepared in co-operation with the A. M. A. Bureau of Investigation. One 1955 leaflet, entitled "To All My Patients," has been distributed by physicians to nearly three million patients.

Internal public relations. A great deal of the Department's activities are with physicians and medical societies, to aid them in building good individual and society public relations programs. A 1955 nation-wide public opinion survey revealed that the areas needing concerted attention were mainly those in which the A. M. A. had been exerting its major public relations efforts. For example, the Association has made great progress in getting county societies to set up night and emergency telephone answering services to insure round-the-clock availability of medical care, to establish grievance committees to hear patients' complaints, and to conduct other public service-type projects. The Department counsels societies on ways to improve public relations, and provides for their use a number of loan packets on specific public relations projects.

Special Public Relations Department activities include services to the Association's president and president-elect in press coverage and speech preparation, handling of arrangements for the President's Inaugural Ceremony at the Annual Session, holding of a Public Relations Institute each fall to discuss problems and technics, promotion of such special events as Medical Education Week, high school science fairs, and Community Health Week, liaison with women's organizations, and a host of other projects in the public relations realm.

LEGION OF MERIT AWARD TO COL. ZELLER

On the occasion of her retirement, Colonel Verena M. Zeller, USAF (NC), is presented the Legion of Merit for "exceptionally meritorious conduct in the performance of outstanding services," by Major General Dan C. Ogle, the Air Force Surgeon General. Colonel Zeller retired 1 July 1956, after more than 20 years' active service, being the first Chief Nurse of the U. S. Air Force Medical Service. Witnessing this ceremony were members of General Ogle's staff—Colonel Russell S. Leone, USAF (MC), Brigadier General Olin F. McIlnay, USAF (MC), and Major General William H. Powell, Jr., the Deputy Surgeon General of the Air Force.

DEATHS

EASLY, Philip Howard, Lieutenant (jg), MC, USNR, of Elyria, Ohio; stationed at U. S. Naval Hospital, St. Albans, N. Y.; graduated in 1954 from St. Louis University School of Medicine, St. Louis, Mo.; commissioned an ensign 11 September 1945; ordered to active duty 6 July 1956; died 19 July 1956, age 32, at St. Albans, N. Y., of coronary thrombosis.

FRENCH, Marguerite Yvonne, Lieutenant (jg), NC, USNR, of Pass Christian, Miss.; stationed at Commander Fleet Activity, Sasebo, Japan; graduated in 1951 from the Southern Baptist Hospital School of Nursing, New Orleans, La.; appointed an Ensign 3 September 1953; ordered to active duty 23 November 1953; died 30 April 1956, age 25, at the Station Hospital, Sasebo, Japan.

HALLER, Ralph Albright, Major, MSC, USAR, of Ephrata, Pa.; stationed at Valley Forge Army Hospital, Phoenixville, Pa.; discharged from enlisted status 17 September 1942; appointed a Second Lieutenant and ordered to active duty 18 September 1942; died 25 May 1956, age 44, at Valley Forge Army Hospital, of lymphosarcoma.

LAWRENCE, Richard Wason, Captain, DC, USNR, of Manchester, New Hampshire; stationed on the U. S. S. *Hornet*; graduated in 1933 from Harvard University Dental School; appointed a Lieutenant in the Naval Reserve on 28 July 1936; ordered to active duty 30 November 1942; released to inactive duty in July 1946 and returned to active duty in 1950; died 28 April 1956, age 46, at the U. S. Naval Hospital, San Diego, Calif., of an occipitotemporal abscess.

MILLER, Walter Paul, Captain, MSC, USAR, of Johnstown, Pa.; stationed at the 7th Evacuation Hospital, Germany; appointed a Second Lieutenant 25 April 1949; discharged from enlisted status 27 June 1949, ordered to active duty as a Second Lieutenant 28 June 1949; died 15 May 1956, age 39, in Germany, of coronary thrombosis.

MEDICAL-DENTAL MILITARY SYMPOSIUM

A combined Armed Forces Medical-Dental Military Symposium will be held at the U. S. Naval Hospital, Great Lakes, Ill., from 26 to 28 September 1956. The program is being planned to include top-level medical personnel from all of the Armed Forces, and representation will be made by the Surgeons General of the Navy, Army, and Air Force and from the Office of the Assistant Secretary of Defense (Health and Medical). Exhibits and scientific programs will be presented and displayed throughout the three-day symposium. Retirement point credits will be given to all eligible Reserve Medical Department Officers who attend.

Inquiries concerning this symposium should be addressed to: Commandant, Ninth Naval District, Attention: Code 46S, Building 1, Great Lakes, Ill.

Promotions of Officers

The following officers of the military medical services on active duty in the Army and Air Force have recently received permanent promotions to the rank indicated.

MEDICAL CORPS

ABRAMS, Frederick R., Capt., USA
ALBRITE, James P., Maj., USA
ASHFORD, Alexander W., Maj., USA
BAKER, Floyd W., Capt., USA
BAKER, George L., Capt., USA
BARRETT, O'Neill, Jr., Capt., USA
BERGIN, James J., Capt., USA
BERTÉ, Stephen J., Maj., USA
BICKERTON, John H., Jr., Maj., USAF
BINGHAM, Wilbur G., Jr., Capt., USA
BLAKE, Hu A., Maj., USA
BLAKELY, Gene T., Capt., USA
BLOUGH, Leland S., Capt., USA
BOEHRER, Philip M., Capt., USA
BOUZARD, Walter C., Capt., USA
BUCHANAN, Richard S., Capt., USA
BURT, Howard, Capt., USA
BRUCE, Charles O., Jr., Maj., USA
BYRD, William G., 1st Lt., USAF
CALDWELL, Samuel W., Maj., USA
CALOMENI, Alexander A., Maj., USAF
CANBY, John P., Capt., USA
CANFIELD, Irving H., Maj., USA
CAREY, Philip C., Capt., USA
CARNES, Marion M., Jr., Capt., USA
CARRASCO, Enrico D., Maj., USA
CASKIE, James D., Maj., USA
CASTELLOT, John J., Capt., USA
CECCARELLI, Frank E., Capt., USA
CHAMBERS, William N., Capt., USAF
CHAMBLIN, Stuart A., Jr., Capt., USA
CHEITLIN, Melvin D., Capt., USA
COHEN, Arthur, Maj., USA
CONRAD, Fred G., 1st Lt., USAF
CONRAD, Marcel E., Jr., Capt., USA
COOK, Hugh H., Jr., Capt., USA
COONEY, James P., Maj. Gen., USA
COX, Lawson G., Maj., USA
COX, William A., Capt., USA
CRANSTON, Robert W., Jr., Maj., USA
DeCOURSEY, Elbert, Brig. Gen., USA
DEUBLER, Keith F., Capt., USA
DIXON, Noah M., Capt., USAF
DOOLING, John A., Capt., USAF
DOUGLAS, William F., Capt., USA
DUFFIELD, John R., Capt., USA
EARLE, Jack L., 1st Lt., USAF
EDWARDS, Cecil G., 1st Lt., USAF
EINARSON, John, Capt., USA
ESKRIDGE, Jack, Maj., USA
ESTES, Hilliard D., Capt., USAF
FORD, Samuel M., Capt., USA
GIBSON, Jack L., Capt., USA
GOLDSMITH, Ralph S., Capt., USA
GORBY, Alvin L., Maj. Gen., USA
GOSLIN, Frederick B., Capt., USAF
GOTTLIEB, M. Milton, Capt., USA
GREEN, Charles R., Maj., USA
GREEN, Henry D., Capt., USA
GRIFFIN, Martin E., Jr., Capt., USA
GUMM, Melvin LeR., Maj., USA
GUENTER, Kenneth E., Capt., USA
HAMATY, Daniel, Capt., USA
HAMMON, William M., 1st Lt., USAF
HARPER, John Y., Jr., 1st Lt., USAF
HATCH, Robert P., Capt., USA
HATHAWAY, Clinton R., Jr., Capt., USA
HEMPHILL, James E., Maj., USA
HENDRIX, Thomas L., Maj., USA
HERMAN, Robert H., Capt., USA
HOLLAND, Charles R., Capt., USA
HOUCK, George W., Maj., USA
HUME, Robert D., Jr., Maj., USA
HUNT, Albert C., Capt., USA
JACOBS, Herbert J., Maj., USA
JACOBS, Paul H., Capt., USAF
JEFFERSON, Samuel C., Capt., USA
JOHNSON, Waine C., Capt., USA
JOHNSTON, Edward H., Maj., USA
JOY, Robert J. T., Capt., USA
KARNES, William E., 1st Lt., USAF
KAWAS, Elias E., Capt., USA
KENT, Alfred H., Capt., USA
KERNAN, Philip McC., Jr., Capt., USA
KIEL, Frank W., Capt., USA
KNOX, Gaylord S., Capt., USA
KORTIS, Howard I., Capt., USA
LANCASTER, James M., Sr., Maj., USAF
LAWLER, James C., Capt., USA
LENYO, Ludimere, 1st Lt., USAF
LEWIS, Evan L., Maj., USA
LINDALL, Dale R., 1st Lt., USAF
LONGFELLOW, Don W., Capt., USA
LOURO, Jose M., Capt., USA
LUDWIG, James M., Jr., Capt., USA
LUKASIK, John, Capt., USA
MacNAIR, Donald S., Capt., USA
MALDONADO, Leonard, Maj., USA
MAYER, William E., Maj., USA
McCARTY, James E., Capt., USA
McCLELLAN, John B., Maj., USA
McFADDEN, Archibald W., Capt., USA
McGREGOR, John G., Jr., Capt., USA
McKEON, Edward C., Capt., USA
McLELLAND, John R., Maj., USA
MILLER, Ray L., Maj., USA
MODRAK, Henry H., Maj., USA
MOORE, William A., Maj., USA
MORRIS, John A., Jr., Capt., USA
MYERS, John E., Jr., Capt., USA
OCKNER, Stephen A., 1st Lt., USAF
O'DONNELL, James J., Maj., USA
OGBORN, Richard E., Maj., USA
OVERHOLT, Edwin L., Maj., USA
PEARSON, Jack W., Capt., USA
PECZENIK, Alois, Maj., USA
PEER, Wayne A., Maj., USAF
PENNER, Clyde E., 1st Lt., USAF
PETERSON, Carl G., Jr., 1st Lt., USAF
POGREBNIAK, Alexander, Capt., USA
POTENZA, Austin D., Capt., USA
PRICE, Frank W., Capt., USA
PRICE, Ira B., Capt., USA
REARDON, Robert M., 1st Lt., USAF
REDNER, Wallace J., Jr., Maj., USA
REID, Spencer B., Maj., USA
REYNOLDS, George A., Maj., USA
RICHARDSON, Arthur W., Capt., USA
RIDGLEY, Charles D., Maj., USAF
RODRIGUEZ, Ariel, Capt., USA
ROSEGAY, Harold, Maj., USA
RYAN, James H., Capt., USA
SANDERS, Lester W., Jr., Capt., USA
SCALETTAR, Raymond, Capt., USA
SCHERZ, Robert G., Capt., USA
SCHONHOLTZ, George J., Capt., USA

MEDICAL CORPS—Continued

SCOTT, Wilson R., Maj., USA
SEITZMAN, David M., Capt., USA
SIEBER, Paul E., Maj., USA
SMITH, Stuart G., Brig. Gen., USA
SNYDER, Dale R., Capt., USA
SORENSON, Roger W., Capt., USA
SPROAT, Harry F., Maj., USA
STORY, Stratton R., Capt., USA
SUMMERSON, Donald J., Maj., USA
THORPE, James H., 1st Lt., USAF
TKACK, Walter R., Maj., USAF
TREDICI, Thomas J., Capt., USAF
TURNER, William R., Maj., USAF
VIVONA, Stefano, Maj., USA
WAYMAN, George W., Capt., USA
WEINSTEIN, David B., Capt., USA
WHELAN, Thomas J., Jr., Maj., USA
WHITCOME, David T., Capt., USA
WILLIAMS, Marion J., 1st Lt., USAF
WINSLOW, Donald J., Maj., USA
WOLFE, Walter McI., Maj., USA
WORRALL, Joseph A., Jr., Maj., USA

DENTAL CORPS

BARTON, John A., Jr., 1st Lt., USAF
BEIDELMAN, Edward R., Capt., USAF
IRONS, Arthur L., Brig. Gen., USA
JAGGERS, Joe H., Capt., USA
JONES, Rex D., Capt., USA
KLAESER, Ray L., 1st Lt., USAF
MARTIN, Edward R., Capt., USAF
PAVLIKOWSKI, Fred L., 1st Lt., USAF
SCHWARTZ, Donald E., Capt., USA
SCHWINGHAMER, William L., Col., USA
STEPHENS, Belton S., 1st Lt., USAF
SWANSON, Raymond W., Lt. Col., USA

MEDICAL SERVICE CORPS

BENADE, Leo E., Lt. Col., USA
BORUFF, Marlyn W., Capt., USAF
CARROLL, Nicholas V., Capt., USA
CLAPP, Marshall W., Capt., USA
COX, Sidney D., Jr., Maj., USAF
DAVIS, William V., Capt., USA
DIBONA, Philip, Capt., USAF
EGGETT, Earl H., Lt. Col., USAF
FLATTER, Findlay F., Maj., USA
HAIGLER, Steven V., Jr., Maj., USAF
HODGE, Joseph E., Capt., USAF
HOLLIDAY, Robert L., Capt., USAF
LARUE, Jack, Maj., USAF
LINDSAY, Eugene K., Capt., USAF
LYSAK, William, Capt., USA
McINTOSH, Billy B., Lt. Col., USAF
MOTLEY, Dellamae, Maj., USAF
PARKER, James W., Capt., USA
PARSONS, Frank R., Jr., 1st Lt., USAF
PLOCK, William L., Lt. Col., USAF
SPENCER, Ralph A., Capt., USA
TURNBULL, Samuel J., Jr., Capt., USA
TURNER, Richard A., Maj., USAF
WILLIAMS, Benjamin H., 1st Lt., USAF
YOUNG, Claude E., Capt., USA

ARMY & AIR FORCE MEDICAL SPECIALIST CORPS

ADAMS, Rachel H., Capt., USA
ANDERSON, Marilyn J., Capt., USA
BARNES, Joan A., Capt., USA
BEARDEN, Florence M., Capt., USA
CHASKA, Shirley M., 1st Lt., USAF
HENSON, Nellie A., Capt., USA
KEEGAN, Nanette G., Capt., USA
KERCE, Myrna H., Capt., USA
KINNISON, Dorothy M., Capt., USA
LAMBERTSON, Elizabeth L., Capt., USA
LEATH, Mary K., Capt., USA
MENDLER, Helen M., Capt., USA
PERRY, Joan H., Capt., USA
PETERSON, Dorothy J., Capt., USA
RADER, Marjorie A., Lt. Col., USAF
REYNOLDS, Cora D., Capt., USA
WAKEFIELD, Patricia, Capt., USA
WESTHOVEN, Mary F., Capt., USA
WITTE, Eileen B., Capt., USA

NURSE CORPS

ALENA, Virginia M., 1st Lt., USAF
ARCHER, Joan D., Capt., USA
AYCOCK, Erline T., Capt., USA
AYNES, Edith A., Maj., USA
BAGLEY, Irene C., 1st Lt., USAF
BATES, Modena L., 1st Lt., USAF
BETZOLD, Margery E., 1st Lt., USAF
BRADLEY, Mary L., Capt., USA
BROSMER, Margaret M., Capt., USA
CARROLL, Helene D., Capt., USA
CASEY, Marguerite C., Capt., USA
CHAMBERLING, Mary A., 1st Lt., USAF
CHANDLER, Glenna L., Capt., USAF
CHRISTENSEN, Donna M., Capt., USA
COFFMAN, Catherine A., Maj., USAF
COLLAVO, Laverine M., 1st Lt., USAF
COOK, Margaret, Capt., USA
DEAN, Martha, Capt., USA
DeJESUS-CRUZ, Maria, 1st Lt., USAF
DeLANEY, Ramona E., Capt., USA
DUNNUM, Delores I., Lt. Col., USAF
DUPLEASE, Margaret L., Lt. Col., USAF
ECKHOFF, Genevieve E., Capt., USA
ELSER, Florence F., Capt., USAF
EVERETT, Anna E., Capt., USA
FARLAND, Vivian, Capt., USA
FRAZIER, Doris S., Capt., USA
FINNEY, Jean P., Capt., USA
FISHER, Jackie V., 2d Lt., USAF
GADDIS, Marie C., Maj., USAF
GAUSLING, Anita L., Capt., USA
GIELDSETH, Betty M., Capt., USA
GINSBERG, Miriam K., Capt., USA
GUBICS, Ellen F., Capt., USA
HILL, Louise, Capt., USA
HORTON, Virginia A., Capt., USA
HOUDEK, Rosemary, Capt., USA
HOUSEKNECHT, Edith M., Capt., USA
HOWLE, Juanita, 1st Lt., USAF
JABLUNOVSKY, Anne C., Capt., USA
JACOBY, Jane E., Capt., USA
JANKOWSKI, Josephine J., Capt., USA
JOHNSON, Elizabeth F., Capt., USA
KANE, Helen M., Capt., USA
KELLAM, Agnes L., 1st Lt., USAF
KOENIG, Kathryn A., Capt., USA
LeBLANC, Claire V., Capt., USA
LEVANGIE, Catherine L., Capt., USA
LIEBOWITZ, Ethel, Capt., USA
LOUCKS, Phyllis M., Capt., USA
LYNCH, Emily R., Capt., USA
MALEWICZ, Wanda, Capt., USA

NURSE CORPS—Continued

MARTA, Katherine M., Capt., USA
McKINNEY, Frances L. T., Capt., USA
MORIN, Felice R., Capt., USA
OWEN, Louella, Maj., USA
PAK, Regina, Capt., USA
PICKETT, Natalie A., 1st Lt., USAF
PLILER, Vivian L., Capt., USA
PORTER, Nan L., Capt., USAF
PRATT, Ruth A., 2d Lt., USAF
QUINN, Mary C., Capt., USA
REID, Kay M., Capt., USA
ROGOVICH, Dorothy J., Capt., USA
RUHE, Carolyn H., Capt., USAF
RYAN, Patricia A., Capt., USA
SAMMONS, Nadine G., Capt., USA
SCHIFFMAN, Regina H., Capt., USA
SCHNEIDER, Patricia M., Capt., USA
SETTER, Marian J., Capt., USA
SHERTZER, Joanne L., 1st Lt., USAF
SHIELDS, Marian C., Capt., USA
SMITH, Nancy V., Capt., USA
STARKEY, Elizabeth J., Capt., USA
SULPIZIO, Virginia M., Capt., USA
VANDIVER, Frances C., Capt., USA
VLAHOVICH, Fanny E., Maj., USA
VSETULA, Josephine M., Lt. Col., USAF
WILEY, Jane R., Capt., USA
WILSON, Ruth A., Capt., USA
WORKMAN, Betty J., Lt. Col., USAF

VETERINARY CORPS

COLLINS, Warren E., Maj., USAF
GANAWAY, James R., 1st Lt., USAF
HAYS, William L., Capt., USA
WATSON, William H., Jr., Capt., USAF

The following officers of the military medical services on active duty in the Army and Air Force have recently received temporary promotions to the rank indicated.

MEDICAL CORPS

ABRAHAMS, Samuel, Capt., USAF
AKERS, William A., Capt., USAF
APPEN, Raymond C., Capt., USAF
ARMSTEAD, J. W., Jr., Capt., USAF
BARATTA, Philip A., Jr., Capt., USAF
BARSANTI, Ronald G., Capt., USAF
BATEMAN, John J., Capt., USA
BAUER, August R., Jr., Capt., USAF
BECKER, Stanley M., Capt., USA
BELL, Ross O., Jr., Capt., USAF
BELZA, Janusz, Capt., USA
BORTZ, Allen I., Capt., USAF
BOYAJIAN, Albert, Capt., USAF
BRAUCHER, R. E., Capt., USA
BRODY, Jerome I., Capt., USAF
BROWN, Coleman M., Capt., USAF
BROWN, William C., Capt., USAF
BRUCE, Gerald A., Capt., USA
BUGG, James W., Capt., USAF
BURKART, C. G., Jr., Capt., USA
BURKHALTER, William E., Capt., USAF
BURKO, Henry, Capt., USAF
CALLOWAY, William C., Capt., USAF
CAPLAN, Harold E., Capt., USAF
CARMODY, Everett J., Capt., USA
CASKEY, Charles J., Capt., USA
COHEN, Stanley N., Capt., USAF
CONE, Lawrence A., Capt., USA
COTTEN, Stonie R., Capt., USAF
CZERNOBILSKY, Bernhard, Capt., USAF
DANIEL, William T., Capt., USAF
DAWSON, David F., Capt., USA
DOMINGOS, William R., Capt., USAF
DRESSLER, Donald P., Capt., USA
DRISKILL, William L., Capt., USAF
DUNLAP, Jack E., Capt., USA
DYE, William B., Capt., USAF
EVANS, William C., Jr., Capt., USA
FARMER, Billy L., Capt., USAF
FEINMAN, Maxwell C., Capt., USAF
FENSTERMACHER, J. M., Capt., USAF
FERGUSON, John S., Jr., Capt., USAF
FIENE, Lawrence C., Capt., USAF
FINGERHUT, Aaron G., Capt., USAF
FLEMING, Burton A., Capt., USAF
FOURNET, James J., Capt., USA
FRIZ, Ralph E., Capt., USAF
GANGEROSA, Eugene J., Capt., USA
GARNISH, Richard A., Capt., USAF
GATTI, Robert R., Capt., USA
GILL, Nicholas P., Capt., USAF
GILMAN, George C., Capt., USAF
GONZALEZ, Louis F., Capt., USAF
GRIFONE, James W., Capt., USAF
GROSHONG, David L., Capt., USAF
GROSS, Charles M., Capt., USAF
HARRIS, Barton A., Capt., USAF
HATFIELD, John R., Capt., USAF
HENDERSON, Jesse T., Jr., Capt., USAF
HENDLEMAN, Leonard, Capt., USAF
HENDRICKS, H. H., Capt., USAF
HILLMAN, Charles H., Capt., USAF
HITTNER, Harry R., Capt., USAF
HOOD, Christopher K., Capt., USAF
HOWARD, Elliott J., Capt., USAF
HUDSON, Thomas L., Capt., USAF
HUMMEL, Robert P., Jr., Capt., USAF
HUNTER, Harry H., Capt., USAF
JENSEN, Warren R., Capt., USAF
KAPLAN, Martin P., Capt., USAF
KELSCH, Robert C., Capt., USAF
KENASTON, T. C., Jr., Capt., USAF
KNOWLES, John A., Jr., Capt., USAF
KNOWLES, William R., Capt., USAF
KOEING, Robert P., Capt., USAF
KVETON, Frank W., Capt., USAF
LAHTI, Richard E., Capt., USAF
LAUER, Kurt E., Capt., USAF
LAYCOCK, Royce, Capt., USAF
LEDER, Archie A., Capt., USAF
LICHTENSTEIN, R. S., Capt., USAF
LIGGETT, Arthur S., Capt., USAF
LINDAHL, James B., Capt., USAF
LINDESMITH, George G., Capt., USAF
LUEKENS, C. A., Jr., Capt., USAF
MAHER, John F., Capt., USAF
MALONEY, Donald W., Capt., USAF
MALOOLY, Donald A., Capt., USAF
MANDELL, Gerald H., Capt., USAF
MANNS, Robert L., Capt., USAF
MARILLEY, Ralph J., Capt., USAF
MASON, Arthur D., Jr., Capt., USAF
MASON, Rhondal, Capt., USAF
McCUTCHEON, F. B., Capt., USAF
McKEAN, Donald B., Capt., USAF
MEDINA, Jose T., Capt., USAF
MEISELAS, Harold, Capt., USAF
MEISTER, Donald G., Capt., USAF

MEDICAL CORPS—Continued

MELE, Howard S., Capt., USAF
MORGAN, Royce H., Capt., USAF
OBENOUR, Sterling W., Jr., Capt., USAF
OLIX, Melvin L., Capt., USAF
OWENS, William F., Jr., Capt., USAF
PAPPAS, Peter, Jr., Capt., USAF
PARKER, Lee B., Jr., Capt., USAF
PATMONT, Jerome H., Capt., USAF
PENCE, Eldon D., Jr., Capt., USAF
PHILLIPS, Robert S., Capt., USAF
PREVOST, Robert W., Jr., Capt., USAF
PUCKETT, William N., Capt., USAF
RABKE, Henry B., Capt., USAF
REDA, Frank A., Capt., USAF
REEN, Bernard M., Capt., USAF
ROSNER, Henry, Capt., USAF
RUBIN, Robert, Capt., USAF
RUBRIGHT, Herbert C., Capt., USAF
SALTER, Edwin C., Capt., USAF
SATLZMAN, Herbert A., Capt., USAF
SCHAFER, Thomas L., Capt., USAF
SCHROEDER, F. F., Capt., USAF
SHELLEY, William M., Capt., USAF
SHMERLING, Sanford A., Capt., USAF
SIDLEY, Nathan T., Capt., USAF
SIGMAN, Eugene M., Capt., USAF
SILVER, David, Capt., USAF
SMITH, Robert L., Capt., USAF
SNIDER, Bobby E., Capt., USAF
SPAIN, Charles A., Capt., USAF
SPENCE, Panel B., Capt., USAF
SPINDELL, Edward, Capt., USAF
SPRITZ, Norton, Capt., USAF
STALLINGS, Hugh A., Capt., USAF
STEDRONSKY, George J., Capt., USAF
STEINSAPIR, Leon J., Capt., USAF
STOLER, Malcolm W., Capt., USAF
STRICKLAND, C. E., Capt., USAF
TATE, Darrell T., Capt., USAF
TAYLOR, Paul W., Jr., Capt., USAF
TAYLOR, William R., Capt., USAF
THOMAS, James H., Capt., USAF
TUCKER, Jerome L., Capt., USAF
TWEEDY, Franklin V., Capt., USAF
URBAN, Frank H., Capt., USAF
VERMEIRE, David A., Capt., USAF
VOGELPHOL, Elmer B., Capt., USAF
WALKER, Gilbert H., Capt., USAF
WELLS, Robert M., Capt., USAF
WENGER, Jay A., Capt., USAF
WHITE, Charles M., Jr., Capt., USAF
WOOD, Ray M., Jr., Capt., USAF
WRIGHT, Allan R., Capt., USAF

DENTAL CORPS

ASH, Allen A., Capt., USA
BRUMBACK, Roscoe L., Capt., USA
CHANG, George H. M., Capt., USA
CONLEY, Max, Capt., USA
COX, George C., Capt., USA
DRAGINDA, Eugene, Capt., USA
DRANGSHOLT, Thomas, Capt., USA
ELBERT, William F., Capt., USA
ELLINS, Alfred D., Capt., USA
FENWICK, Terrance L., Capt., USA
FESSLER, James J., Capt., USA
FOLTAN, Stefan M., Capt., USA
FONTANA, Benny, Capt., USA
GEORGES, Constant J., Capt., USA
HANSON, Harry J., Capt., USA
KING, Marvin B., Capt., USA
LAMPERT, Henry, Capt., USA
MAYBERRY, Don M., Capt., USA
NEILSON, George E., Capt., USA
PRILL, Richard D., Capt., USA
SADOWSKY, Donald, Capt., USA
WREN, Howard C., Capt., USA

MEDICAL SERVICE CORPS

BALL, John E., Jr., Capt., USAF
BLACK, James W., Maj., USAF
BROWN, Irwin G., Maj., USAF
DAVIS, William J., 1st Lt., USA
EDGERLEY, Edward, Jr., 1st Lt., USAF
FLAVION, Raymond A., Capt., USAF
GOODMAN, Fred, Maj., USAF
GOULD, Norman S., 1st Lt., USAF
GULLERUD, Ernest N., 1st Lt., USAF
HORTON, John J., Lt. Col., USAF
JOHNSON, Kenneth B., Col., USAF
McANALLY, Reagan V., Capt., USAF
PHILLIPS, Howard F., Lt. Col., USAF
PIPPITT, Robert G., Capt., USAF
SANGSTER, Maynard A., Lt. Col., USAF
SITZER, Harvey A., 1st Lt., USA
SMITH, Francis S., Lt. Col., USAF
STERLING, James E., Capt., USAF
THOMAS, Frederick W., Lt. Col., USAF
VANSCOY, Howard W., Jr., Capt., USAF

ARMY & AIR FORCE MEDICAL SPECIALIST CORPS

REINBOLD, Carolyn, Capt., USAF
SHULTZ, Winifred J., Capt., USAF

NURSE CORPS

BURDETTE, Ethel, Capt., USAF
CHASZAR, Otill A., Capt., USAF
COUGHLIN, Mary H., Capt., USAF
GLASMEYER, Mildred R., Capt., USAF
HARRIS, Katie P., 1st Lt., USAF
JANSOHN, Mary A., Capt., USAF
KUKCINOVICH, Beatrice E., Capt., USAF
MACE, Laura I., Capt., USAF
MYLES, Ruth M., Capt., USAF
NEWSOM, Clara K., Capt., USAF
OKEEFE, Frances M., Capt., USAF
PARTON, Veda G., Capt., USAF
PROCYK, Mary, Capt., USAF
REED, Mary J., Capt., USAF
ROBBINS, Lola B., 1st Lt., USAF
THOMAS, Georgia M., Capt., USAF

VETERINARY CORPS

BECKER, Fredrick E., Capt., USAF
BLANCHARD, Harry F., Capt., USAF
DAKE, Charles D., Capt., USAF
FRANZMANN, Albert W., Capt., USAF
GORMAN, Harry A., Col., USAF
KINDINGER, Richard A., Capt., USAF
NETTLES, John R., Jr., Col., USAF

Reviews of Recent Books

Christopher's TEXTBOOK OF SURGERY, edited by *Loyal Davis*, M. D. 6th edition. 1,484 pages; 1,359 illustrations on 716 figures. W. B. Saunders Co., Philadelphia, Pa., 1956.

The sixth edition of Christopher's *Textbook of Surgery*, now edited by Loyal Davis, M. D., has little resemblance to the old text. Completely reorganized, the broadly diversified subject of general surgery is handled in a more orderly manner. There are 87 contributors in the present edition compared to 198 in the fifth edition. This gives each contributor a much better opportunity to cover a particular subject. By handling the topics in this manner, a more smoothly written and more interesting book has been produced. Only 32 of the previous group of contributors are included in the present group of collaborators. The illustrations and figures have also been revised, and many new subjects have been introduced. Among these are: history of surgery, endocrinology and metabolism in surgical care, nuclear radiation injuries, and physical medicine and rehabilitation. A short biographic sketch about each contributor also appears, adding an intimate and interesting note to the text. The end result is an excellent new textbook of general surgery.—*FERDINAND V. BERLEY, Capt., MC, USN*

DISEASES OF THE NERVOUS SYSTEM, by Sir *Russell Brain*, Bt., D. M. (Oxon.), P. R. C. P. (London). 5th edition. 996 pages; illustrated. Oxford University Press, New York, N. Y., 1955. Price $10.50.

This is the fifth edition of a well-known, single-volume text of neurology by one of England's outstanding specialists in this field. As noted in the preface to the first edition in 1933, the author has included appropriate sections on anatomy and physiology as introductions to the various clinical chapters. This departure from the more traditional arrangement, in which anatomy and physiology are treated as separate introductory chapters, fulfills its purpose of aiding the reader to integrate basic science material with clinical data.

The volume is divided into 23 chapters that correspond to the usual categorization of neurologic disorders such as tumors, congenital and degenerative diseases, injuries, infections, syphilis, diseases of cerebral circulation, viral infections, intoxications, and the like. The first chapter serves as an introduction and considers disorders of function in the light of anatomy and physiology. Here is included a rather complete explanation and elaboration of the neurologic examination, with discussions of abnormal findings and their causation from the standpoint of altered function or structure. The last chapter, "Psychological Aspects of Neurology," is an endeavor to state the extent to which behavioral or psychologic phenomena can be understood in terms of

neurophysiology. In a sense this chapter serves notice that the brain is the organ of the mind and that the neurologist cannot avoid considering the probabilities of behavioral phenomena that may be associated with structural or altered physiology of the nervous system.

The author draws upon his vast experience to write concisely and state unequivocally his views pertaining to this or that neurologic disorder and its treatment. There is no vacillation or attempt to theorize. For this reason this text has served, and should continue to serve, a most useful function for medical students and a reference for practitioners, internists, and other physicians. Neurologists are apt to find the text somewhat limited in scope and lacking in detail that no single volume of neurology could hope to achieve.

—*ALBERT J. GLASS, Col., MC, USA*

MEDICAL RESEARCH: A MIDCENTURY SURVEY. Two volumes. Volume I, American Medical Research: In Principle and Practice. Volume II, Unsolved Clinical Problems: In Biological Perspective. Published for the American Foundation, New York, N. Y. Chairman: *Curtis Bok;* Member-in-charge: *Esther Everett Lape;* Committee of 26 Consultants. Volume I, 765 pages; Volume II, 740 pages. Little, Brown & Co., Boston, Mass., 1955. Price $15 for set of two volumes.

This monumental two-volume survey of American medical research has as its stated purpose the clarification of the role of research in biology, chemistry, and physics in relation to the maintenance of high standards of medical education and of medical care for the whole population.

Volume 1 presents the biologic basis of medicine; the contributions of chemistry, physics, and mathematics to biologic and medical research; current conditions affecting research; a comprehensive view of agencies engaged in and supporting research; and an examination of scientific literature and products with the controls in effect.

Volume 2 presents the current concepts of a series of medical problems and the contributions from many investigative areas. The authors have selected 10 such medical problems—metabolism in its basic cellular aspects as well as those of the organism as a whole, cancer, infertility, arteriosclerosis, hypertension, rheumatic diseases, tuberculosis, viral diseases, alcoholism, and schizophrenia.

It must be said that these volumes have achieved in a significant measure the purpose of the survey. This work is a very discerning and penetrating view of the role of the basic sciences in medical research and in medical education. Perhaps more than any other, this survey will establish, for those not in the medical sciences, and possibly for some in the medical field, the fact that sound, advanced medical teaching must be coupled closely with medical research, if not by the same individuals, then by the same departments and institutions.

The particular groups for whom this publication has special value include perhaps first of all those in the field of medical research, for

this survey has ranged deeply into many facets of the support, administration, and the pattern itself of medical research. These volumes should be of value also to those who have a part in the administrative aspects of medical research, and all who have some measure of responsibility for the support of medical research. These volumes will serve the clinician, the specialist, and the professional man outside the medical sciences who desires the general background and present-day pattern of medical research for other reasons, and finally the person of any background who wishes to review one of the most intensely interesting developments of our time.

The style is worthy of some comment. The facts are presented very concisely, with evaluation generally in the form of quotations or extracts from authorities in the particular field. While in the more subjective fields this manner of presentation occasionally results in a rather concentrated diet with many rich and provocative phrases, and reads like a series of quotations from dedicatory addresses, the material in general is well chosen and assembled in a sound manner. In those areas of varied opinion or controversy there appeared to be an honest effort, at least by those contributors familiar to the reviewer, toward a balanced presentation. There are abundant references in the text, with specific listing of sources in an appendix to each volume.

Points of criticism are minor in the face of this outstanding compilation of data on the field of medical research and competent review of the particular clinical problems. Occasional errors are encountered which are not of moment and which, furthermore, would be quickly apparent to anyone familiar with, or moving into, the particular subject.

This reviewer found these volumes both interesting and stimulating, and a valuable sourcebook for several phases of the medical research field.—*CARL F. TESSMER, Col., MC, USA*

MANAGEMENT OF PAIN IN CANCER, edited by *M. J. Schiffrin,* Ph. D. Eight contributors. 245 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1956. Price $4.50.

This short, concisely written book was originally composed primarily for the benefit of the general practitioner. The mechanisms for pain relief are simply and succinctly expressed, running through the gamut of modalities from systemic analgetics to psychologic support. It is not the purpose or intent of this text to provide the practicing physician with a handbook to which he can turn for exact instruction in the performance of all methods of pain relief in the cancer problem. Many methods identified under nerve blocking, neurosurgical, humoral, chemical, general surgical, and radiation procedures can only be performed by highly expert individuals working in these various mediums. This small volume does give the clinician a bird's eye view of the vast supporting mechanisms which exist for the amelioration of the pain problem in the cancer patient. It will permit him to recommend more intelligently such assistance which might not otherwise have been con-

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sidered appropriate or feasible. I believe this volume has a definite place in the library of the clinician who must often give much thought to the alleviation of distress in a problem generally considered hopeless and inevitable.—*DAVID GOLD, Col., USAF (MC)*

THE INTERPRETATION OF THE UNIPOLAR ELECTROCARDIOGRAM, by *Gordon B. Myers*, M. D. 164 pages; illustrated. The C. V. Mosby Co., St. Louis, Mo., 1956. Price $4.75.

This short book impresses the reader as the distillate of the author's extensive experience, thought, and contributions in the field of electrocardiography. The style of the book is superbly concise and organized but if the author has been sparing with words, he has been comprehensive in the subject material presented. In the preface the author states that the book is an outgrowth of manuals prepared for graduate courses previously given by the author and therefore hews strictly to the format common to such manuals. For this reason there is no bibliography, and illustrations are diagrammatic and not profuse. However, the clarity of the author's presentation more than compensates for the lack of illustrations. The discussion of the arrhythmias is particularly well organized, clear, concise, and comprehensive. This book will be a valuable and relatively inexpensive addition to the library of anyone interested in the subject and an extremely useful guide for the student or busy practitioner who may wish to refresh his familiarity with the subject and has not the time that more formal texts require. In this unpretentious book Dr. Myers has again made a useful contribution to the literature.—*THOMAS W. INMON, Lt. Col., MC, USA*

SURGICAL DIAGNOSIS, by *Philip Thorek*, M. D., with drawings by *Carl T. Linden*. 320 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., 1956. Price $12.

This textbook includes only those conditions which more commonly fall into the realm of general surgery. Obviously in the space of one volume an attempt could be made only to deal with those aspects of surgery which would seem to be the most important. The book reflects the effort to give more information about those matters with which every general practitioner should be familiar rather than to attempt to cover the entire field of surgery.

While no emphasis was made to minimize laboratory aids, the main effort in this text has been made toward the recognition and diagnostic application of signs and symptoms of lesions that may be seen, felt, or heard. It is written in a clear, concise, and easily readable style. The author has resorted to many line drawings and illustrations which give clarification to the text. The illustrations are good and all are original. There are no references given at the end of each chapter.

This book should be found to be very helpful, not only to general practitioners but also to general surgeons who desire to obtain in a concise manner information about the diagnosis of most common surgical conditions.—*JAMES D. KING, Capt., MC, USN*

ADVANCES IN PEDIATRICS, Volume VIII, edited by *S. Z. Levine.* 273 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1956. Price $8.

This publication is issued yearly and consists of seven distinct reviews, each relating to a separate topic of current interest to those who deal with children. It does not differ in make-up from the preceding seven volumes. The treatment of each subject is exhaustive and serves not only as a means of bringing the reader up to date but also as an excellent source of reference material. The titles of the reviews in the current volume and the authors are as follows: (1) The Etiology of Infantile Diarrhea, by Horace L. Hodes; (2) Isosexual Precocity in Boys Including a Case of a Gonadotropin-Producing Teratoma, by Samuel Z. Levine and associates; (3) Sarcoidosis in Childhood, by John P. McGovern and Doris H. Merritt; (4) Offspring of Diabetic and Prediabetic Mothers, by Herbert C. Miller; (5) Subdural Lesions in Childhood, with Special Reference to Infectious Processes, by Margaret H. D. Smith; (6) Prevention of Accidents in Childhood, by George H. Wheatley; and (7) Mental Deficiency, by Herman Yannet.

This book, as does its predecessors, provides condensed information about some common and some less familiar subjects. All those who deal with children will find it of value in one way or another.

—*SEYMOUR E. WHEELOCK, Capt., MC, USAR*

THE NAVAL OFFICER'S MANUAL, by Rear Admiral *Harley Cope,* USN (Ret.). A Ready Reference of Helpful Information and Counsel for All Officers of the United States Navy and the Marine Corps. 3d edition. 608 pages; illustrated. The Military Service Publishing Co., Harrisburg, Pa., May 1955. Price $4.

There are several good books which serve as sources of useful information for Navy and Marine Corps officers. In this reviewer's opinion, the new edition of Admiral Cope's recent manual is the best of these.

It has the twin advantages of profuse illustrations and current data. The rapidly changing organization of the armed services, the many new regulations, benefits, and recommendations make books of this type out of date relatively quickly. In this book, the information is surprisingly current. Almost every conceivable topic dealing with personal and interpersonal affairs is considered. These range from uniforms to retirement pay, and from descriptions of aircraft carriers to housing in the Azores.

There is also an exceptionally complete appendix of naval and military terms, as well as a detailed index.

This clear and informative manual will be especially appreciated by newly commissioned officers, but all naval readers will benefit from its storehouse of information on personal and professional matters.

—*S. O. WAIFE, Lt. Comdr., MC, USNR*

APPLIED ORTHODONTICS, by *James David McCoy,* M. S., D. D. S., in collaboration with *Earl Emanuel Shepard,* D. D. S. 7th edition. 336 pages; 212 illustrations and 9 plates. Lea & Febiger, Philadelphia, Pa., 1956. Price $7.50.

This is written primarily as an introductory text in the field of orthodontics. The first eight chapters concern the scope of orthodontics. Growth, development, and anomalies and their etiology are presented in an interesting, concise manner. Pretreatment records, including the technics of manipulation of impression material and the making of gnathostatic casts, are adequately described. Essential requirements of orthodontic appliances and the detailed application of the authors' therapy are presented with a number of case reports from actual practice.

The illustrations and plates are excellent and serve to enhance the orderly presentation of the subject material.

It is recommended, not only for the student of orthodontics, but for the practicing orthodontist, pedodontist, and general practitioner of dentistry.—*GEORGE H. PARROT, Jr., Lt. Col., DC, USA*

PRACTICAL ORTHODONTICS. Original Text by the Late *Martin Dewey.* Fifth, Sixth, Seventh, and Eighth Editions revised by *George M. Anderson,* D. D. S. 8th edition. 702 pages; illustrated. The C. V. Mosby Co., St. Louis, Mo., 1955. Price $17.50.

In the preface to this eighth edition of *Practical Orthodontics,* the editors state the absolute essentiality of continuing education in the professions. In the short period between the seventh and eighth editions, there have been important additions to diagnostic and treatment procedures which every practitioner or student of orthodontics must include in his service to his patients.

The 22 chapters of this edition are unusually well organized and indexed. There are adequate photographs, x-ray film reproductions, diagrams, and drawings to clarify the subject matter presented. The term "normal occlusion" is analyzed and defined. It has been adjusted to reality wherein the term is recognized as covering a range of variability rather than a rigidly fixed standard of perfection. Inheritance, as it affects facial form, receives considerable attention, for evidence continues to mount that genetic factors control and direct many of the orthodontic problems. Anthropometric considerations and cephalometric appraisal have been included in this edition because of the importance each of these fields has assumed in orthodontic practice. An entirely new subject of osteoporosis or craniotabes, as it affects the skull, face, and jaws and influences malocclusion, is included. Improvement in the removable appliance field and the addition of more material relative to extra-oral anchorage outlines the possibilities in this phase of clinical effort. All subjects derive stature from a record of the past, and the history of orthodontics has been rewritten to provide a more comprehensive review than have previous editions.

—*GEORGE S. MOORE, Col., USAF (DC)*

THE GIVE AND TAKE IN HOSPITALS, A Study of Human Organization in Hospitals, by *Temple Burling*, M. D., *Edith M. Lentz*, Ph. D., and *Robert N. Wilson*, Ph. D. 355 pages. G. P. Putnam's Sons, New York, N. Y., 1956. Price $4.75.

In this book is presented a very readable report of human relations problems in hospitals, written to truly interest and profitably instruct hospital personnel at all levels. It should prove to be an invaluable source of practical guidance, destined to become an essential library edition for hospitals of all types and for institutions concerned with training personnel for hospital service.

The report represents experiences and observations accumulated during a five-year period of research in community hospitals operated under the auspices of voluntary organizations for nonprofit purposes, where general medical and surgical care is offered and most patients are short-term guests.

The hospitals selected for study and analysis of interpersonal relationships ranged in capacity from 50 to 850 beds, one located in a metropolitan community, the others in smaller and homogenous towns and in rural or semirural areas.

Approximately 1,000 persons were interviewed, many of whom had had a wide experience in hospitals elsewhere. They came from all levels of the hospital system and a great many of their answers to pertinent questions by the interviewers and voluntary statements of significance are quoted throughout the book. The investigators in many instances assumed employee roles, actually performing nonprofessional routine work.

The most important chapter of the book, in my opinion, is titled "The Admissions Office." Here are described at length and in considerable detail the many elements of human relations essential to sound management and impartial amicable relationships with community doctors and the local population. Every practicing physician and surgeon in this country should be afforded the opportunity of reviewing this one chapter of the book if none other. It is my fervent hope that each reviewer apply the object lesson contained therein to his own situation with regard to exercising prerogatives of prestige and popularity in seeking admissions ahead of patients of other doctors with lesser professional experience and recognition by admissions office personnel.

Other interesting group relationships pointed out by the committee were those existing between nursing staff and dietitians with perhaps a tinge of rivalry, and comparison of motivation factors between housekeepers and laundry workers.

The study was initiated by the American Hospital Association with a view to achieving more effective co-operation between employers and employees and more general recognition of their mutual rights, obligations, and duties.—*CHARLES L. CRAWFORD, Comdr., MSC, USN*

PRINCIPLES OF RENAL PHYSIOLOGY, by *Homer W. Smith*, Sc. D., M. D. (Hon.). 237 pages; illustrated. Oxford University Press, New York, N. Y., 1956. Price $5.

This is an excellent, brief, general survey of renal physiology in which voluminous references and data have been largely omitted to permit a clear presentation of principles. The subject matter includes anatomy, an historical note on theories of renal function, concepts of renal clearances and information derived therefrom, excretion of specific substances, mineral and water metabolism, acid-base equilibria, and control of the renal circulation. The book is more than a "distillate" from the author's well-known comprehensive work, *The Kidney: Structure and Function in Health and Disease*—it brings us up-to-date on important interim research, such as electron microscopy of the nephron, the tubular cell as an ion exchanger, "plasma-skimming" in the renal circulation, et cetera.

The material is well organized, smoothly written, and frequently spiced with bits of philosophy and wit. Despite the "almost lecture-style," the author manages, by skillful use of footnotes and appendixes, to pack much factual information into this small volume. Thus, many facts of comparative physiology are tersely stated: "Na^+ predominates in the red cells of the dog, cat, ox, goat, etc., but K^+ predominates in man, monkey, guinea pig, rat, rabbit, pig, horse, and some sheep."

The appendixes include an interesting explanation and derivation of "The Henderson-Hasselbalch Approximation Equation, 'A Most Useful Monument to Human Laziness'." There are nomograms for estimation of surface area in dog and man, and a most useful "do-it-yourself" section giving explicit instructions for the performance of renal clearances, including details of chemical methods for inulin, PAH (para-amino-hypuric acid), creatinine, and chloride. Appendix 6 consists of answers to problems presented throughout the text, inviting the student to learn by calculating (and interpreting) specific clearances, Tm's, et cetera, from given "raw data."

The short bibliography was selected to guide the student to articles of historical significance, reviews, and recent articles (since 1950) presenting notable advances.

The format and illustrations are good, and the colored plate showing the anatomy of the kidney is lucid and beautiful.

Although this book lacks a preface the reader soon appreciates that it superbly fulfills the goal implicit in its dedication: "To all students for whom the ever-widening horizons and increasing details of medicine make the art of healing more difficult and yet more certain."

Any physician or scientist interested in renal physiology should own this book.—*MARION E. McDOWELL, Lt. Col., MC, USA*

A SHORT HISTORY OF MEDICINE, by *Erwin H. Ackerknecht*, M. D. 258 pages. The Ronald Press Co., New York, N. Y., 1955. Price $4.50.

Dr. Ackerknecht is the Professor of History of Medicine and the director of a very active department at the University of Wisconsin Medical School. He is best known by his biography of Rudolf Virchow. In his new book he has tried to delineate the entire course of medicine from paleopathology to the 20th century, compressing the subject within 20 chapters of approximately 10 pages each. Naturally, he can touch only on some of the highlights. Dr. Ackerknecht's style is fluent and his exposition elegant. He uses easy, nontechnical English. The book is meant to reach a large audience regardless of specialized training. It will be read with profit by anyone interested in acquiring some idea of the status of medicine throughout the ages. In this regard the book fills a void which has existed in the American literature.

—*HELMUTH SPRINZ, Lt. Col., MC, USA*

AMERICAN MEN OF SCIENCE, A Biographical Directory, edited by *Jaques Cattell*. 9th edition. Volume II, "Biological Sciences." 1,276 pages. The Science Press, Lancaster, Pa., and R. R. Bowker Co., New York, N. Y., 1955. Price $20.

The 9th edition of the well-known American Men of Science is so much larger than its predecessors that it was decided to publish the brief biographies of about 95,000 names in three volumes.

Volume 2, covering the Biological Sciences, includes about 25,000 biographies and an additional 5,000 references to persons listed in Volume 1 (Physical Sciences), which means that a total of 30,000 biological scientists are recorded.

This unique series, which began in 1906, has served a most useful function in making available the essential biographical information about a great number of our leading scientists.

—*BENNETT F. AVERY, Capt., MC, USN*

PEDIATRIC X-RAY DIAGNOSIS, A Textbook for Students and Practitioners of Pediatrics, Surgery and Radiology, by *John Caffey*, M. D. 3d edition. 1,059 pages; 2,264 illustrations on 1,267 figures. The Year Book Publishers, Inc., Chicago, Ill., 1956. Price $28.

The first edition of this book was published in 1945. It filled a long-standing need in the roentgenologic literature, as no book on pediatric diagnosis had been printed in English since the appearance in 1910 of the pioneer publication by Dr. Thomas Morgan Rotch of Harvard University. Caffey's outstanding book immediately became the standard reference work in its field and to date it has had no competitor.

This handsome new third edition became necessary because of the rapid increase in knowledge in pediatric roentgenology. It has been extensively revised, with 197 additional pages and 228 additional illustrations. Additional space has been devoted to the presentation of normal radiologic findings. There is a new section on congenital

dysplasia and dislocation of the hip. The sections on congenital heart disease, megacolon, coxa plana, and slipping of the femoral epiphysis have been rewritten, and there is a chapter on intracranial pneumography. There are some 70 other revisions or introductions of new subjects throughout every section of the book. The work is encyclopedic except for the omission of material on such specialized technics as angiocardiography, cardiac catheterization, planigraphy, cerebral angiography, and myelography, all of which are treated in separate monographs and which the author rightly considers better omitted from a text on general diagnosis. Following discussion of each individual entity, and almost on every page, are listed the references pertinent to that entity. This division of the text into short sections, each devoted to but a single item, adds greatly to its convenience for reference use.

The text is clearly written and handsomely printed on heavy gloss paper. Illustrations are uniformly excellent. All radiographs are reproduced in the original negative and are of high quality. Many line drawings accompany reproductions of radiographs to point out the finer details of the latter. The binding is attractive but seems too light for a massive 6¾-pound reference book that will be constantly in use, particularly in busy teaching departments. A more serviceable binding would be desirable.

This magnificant volume stands unrivaled in its field and reflects great credit on the author and the publishers. It is to be regretted that its increase in size is reflected in a large increase in price over the previous editions, which undoubtedly will somewhat limit its general availability. —*CARR E. BENTAL, Capt., MC, USN*

THE NEUROSES IN CLINICAL PRACTICE, by *Henry P. Laughlin,* M. D. 802 pages. W. B. Saunders Co., Philadelphia, Pa., 1956. Price $12.50.

This comprehensive and well-thought-out book is a worthwhile addition to the list of psychiatric textbooks. It is one of the few that concerns itself only with the neuroses, and while it appears to be partly directed toward the medical student and nonpsychiatrist, it offers much that is useful to the psychiatrist and teacher. Although the author's orientation appears to be psychoanalytic, he carefully avoids the use of the less well-defined psychiatric and psychoanalytic terms and concepts. Indeed, he is most careful to define his descriptive terms, both in the body of the text and in a large and complete glossary at the end. He develops all of his concepts methodically and with great care, so that at times the more experienced reader feels a certain amount of repetitiveness.

The author uses a large number of very brief case histories to illustrate his descriptive material. These are effectively presented, and only the part of the history relevant to the point or points discussed are utilized. They serve to complement the text in a most interesting manner. The format of the book includes carefully labeled chapters, sections, and subsections, with a 22-page table of contents referring

to each of these. The long table of contents, plus a 53-page index of subjects and a separate index of personal names, all make for very easy reference use of the book. The text includes description, dynamics, and treatment of each of the neuroses, as well as sections or chapters on such general areas as anxiety, the mental mechanisms, primary and secondary gains in emotional illness, over-concern with health, and the neuroses following trauma. The latter contains an interesting section on "brain washing."

This book is recommended for medical students, but perhaps more for the clinician who sees a large number of neurotic patients in general practice. The latter will find this an easily read, interesting, and practical reference book. Psychiatrists, particularly those who teach, will find the author's descriptions and illustrative anecdotes to be thought-provoking and helpful. The author has succeeded in using his apparent wealth of clinical experience to present his subject in an interesting, practical, and useful textbook.—*WILLIAM HAUSMAN, Lt. Col., MC, USA*

ELECTROCARDIOGRAPHY, Fundamentals and Clinical Application, by *Louis Wolff*, M. D. 2d edition. 342 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1956. Price $7.

The second edition of this book has been prepared with the purpose of incorporating certain aspects of spatial vectorcardiography. The importance of spatial orientation of cardiac vectors in evaluating electrocardiographic variations is emphasized throughout. The author presents in an easily readable, readily comprehensible, and well-illustrated manner the principles of applied electrophysiology of the heart. He illustrates clinical electrocardiographic findings with reproductions of many tracings of both normal and abnormal patterns. A new section on the arrhythmias and disturbances of cardiac mechanism has been added.

There is considerable space allotted to electrocardiographic patterns in the standard leads. More frequent inclusion of findings in right precordial leads (V_{3R} and V_{4R}), left chest leads (V_7 and V_8), and high precordial leads would have simplified and clarified some interpretations.

In discussing the electrocardiographic diagnosis of myocardial infarction, the author states: ". . . acute S-T segment displacement and characteristic progressive T wave changes constitute a more reliable sign of infarction than do the QRS deflections." Perhaps more emphasis should have been placed on the differentiation between the normal and the abnormal Q wave, particularly in relation to the associated type of P wave.

Generally speaking, the book is free from typographical errors, and the reproductions of drawings and electrocardiograms are clear. It is recommended as a basic introduction to electrocardiography and vectorcardiography for the student and the practicing physician who is interested in the fundamentals in this field. The section on the arrhythmias

is excellent. The section on clinical electrocardiography is more suited for the trained internist or cardiologist, who should enjoy this book as a valuable addition to his medical library.

—*ROBERT N. CLASS, Maj., USAF (MC)*

THE CELLULAR BASIS OF WOUND REPAIR, by *Martin Allgöwer,* M. D. 125 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1956. Price $6.50.

For many years there has been a divergence of opinion concerning the role of nucleated blood cells in the formation of granulation tissue. Many of our presently accepted theories of wound healing are based on Marchand's thesis that the precursors of connective tissue came from small vascular adventitial cells and not from blood cells. Maximow, on the other hand, postulated that nucleated blood cells were the precursors of fibroblasts.

This monograph is the result of several years of research carried out by a very capable investigator in America and in Switzerland. It is an attempt to establish the facts postulated by Maximow that repairs regarding regeneration of connective tissue find principal support from an adequate local supply of mononuclear blood elements. Experiments investigating the occurrence of mytosis in fresh wounds and granulation tissue formation following total body irradiation indicated that the part played by certain blood elements in the formation of new connective tissue has been greatly underestimated. Extensive reduction in the number of these cells resulted in a decrease of granulation tissue of from 50 to 70 per cent. The experiments presented give no definite indication as to which of the blood cells are capable of producing connective tissue. It seems improbable that monocytes are the only element involved.

This book probably is not of great interest to the clinician but should be of considerable value to anyone interested in the study of wound repair. Several technics for studying wound repair at the cellular level are carefully described. The book is beautifully illustrated with several excellent photomicrographs.—*CURTIS P. ARTZ, Lt. Col., MC, USA*

CLINICAL LABORATORY METHODS AND DIAGNOSIS, Volumes One and Two, by *R. B. H. Gradwohl,* M. D., D. Sc. 5th edition. Volume I, Chapters I to VI, pages 1-1220, 29 color plates, 295 figures. Volume II, Chapters VII to XVII, pages 1221-2452, 23 color plates, 470 figures. The C. V. Mosby Co., St. Louis, Mo., 1956. Price $38.50 for two volumes.

The first edition of this voluminous work was published in 1935. The fifth edition is in two volumes of 2,460 pages, having been contracted from three volumes and 3,100 pages which constituted the fourth edition in 1948. The book is well bound, the paper is good, and the printing easily readable. There are 17 chapters, each dealing in general with a recognized division of clinical pathology as well as one each devoted to basal metabolism, electrocardiography, toxicological technic, and tissue cutting and staining.

Throughout the book the generally accepted method of primary choice is given first for most technical procedures. This is frequently followed by one or more alternate methods, some of which are obsolete and could well have been omitted. An interpretation of findings generally follow procedures in most instances.

The chapter dealing with hematology is the largest, consisting of 477 pages—a fair sized book in itself. The hematologic technics are presented in considerable detail. Critical evaluation of this chapter reveals several paradoxes as exemplified on page 523 where the term "granulocytic" leukemia is recorded as the one of choice, yet throughout the text the author persists in using the term "myelocytic." The organization of this chapter lacks delineation into well-defined topics. For instance, the section on the normal composition of blood which includes the abnormal forms of hemoglobin lacks any information on the various electrophoretic types of hemoglobin. The many colored blood cell plates are of fair quality. The section on heredity of blood groups is covered in considerable detail and should be a convenient reference in studies concerning questionable paternity.

While some of the more common examinations of presumptive virus material, such as those for rabies, are sufficiently presented, better instructions for collecting, preserving, and shipping such material would be desirable. The treatment of laboratory procedures for the study of viruses is inadequate, and most of it could well be eliminated.

In general, the book gives in more or less detail almost all current and recent laboratory procedures with which the laboratory officer might have to deal, as well as many which are now obsolete and should not be perpetuated. Although many methods are described conveniently, descriptions of others are widely scattered as, for example, with reference to the detection of *Treponema pallidum* in fresh material, the location of partial descriptions ranges from Volume 1, page 11, to Volume 2, pages 1582 and 1644, while serologic tests are considered in a different chapter altogether.

An attempt is made to present the clinical aspects of many diseases, particularly those mentioned in interpretation of results of laboratory tests. It is apparent in a number of areas that the clinical aspects of those diseases presented are paraphrases of the summaries of articles for which references are given. Some contain omissions of phrases which render the statements concerning the disease meaningless; one example obvious to this reviewer is in the section dealing with epidemic hemorrhagic fever, page 835, where the relationship of shock and the occurrence of necrosis in the anterior lobe of the pituitary is discussed.

Although the organization for presentation of the vast amount of material may leave something to be desired, the indexing appears to be adequate so that from the standpoint of reference the book can readily be used. The index appears in each volume.

From the standpoint of the needs of a medical laboratory officer this text is sufficiently complete so far as content is concerned, although sometimes the subject matter is poorly arranged, necessitating considerable cross-referencing. These two large volumes would serve better as a work of reference rather than a handy daily guide.

—*WILLIAM M. SILLIPHANT, Capt., MC, USN*

HISTORY OF THE SECOND WORLD WAR, United Kingdom Medical Series. Editor-in-Chief, Sir *Arthur S. MacNalty*, K. C. B., M. D., F. R. C. P., F. R. C. S. THE ROYAL AIR FORCE MEDICAL SERVICES, edited by Squadron Leader *S. C. Rexford-Welch*, M. A., M. R. C. S., L. R. C. P., R. A. F. Volume II, Commands. 695 pages; 54 plates and 51 maps, diagrams and figures. Published by Her Majesty's Stationery Office, London, E. C. 1, 1955. To be purchased from York House, Kingsway, London, W. C. 2. Price 75s. net ($13.50).

The story of how the British military medical profession met the challenge of air warfare is one of the brighter chapters of World War II. This story encompasses not only the problems of aviation medicine but the age-old problems of field medicine, such as sanitation, housing, and hospitalization, as well.

Volume II, *Commands*, continues the comprehensive and official history of how the Royal Air Force Medical Services supported the Air Force combat mission. The previous volume treated the area of administration, and the third is scheduled to cover the campaigns. This unit of three volumes, produced under the able editorship of Squadron Leader Rexford-Welch, is one part of the comprehensive series, "History of the Second World War, United Kingdom Medical Series." Sir Arthur S. MacNalty, Editor-in-Chief, has written a foreword.

The 12 chapters treat the Bomber, Fighter, Coastal, Transport, Balloon, Army co-operation, Maintenance Flying Training, and Technical Commands; and also the closely allied formations, the Second Tactical Air Force, No. 60 Group, and the Royal Air Force Regiment. Chapter 1, which discusses the Bomber Command, is possibly the most significant in the book because it deals in detail with the many mutual problems that harassed all the commands; thus it sets the pattern for the book and makes it possible to avoid repetition in subsequent chapters. In this chapter the problems of aviation medicine are treated at length. The section which deals with such areas as oxygen, night vision, frostbite, and flying stress is alone worth the price of the book. The hitherto taboo problem of "moral fibre" is discussed from the medical viewpoint.

While one wishes the present history had been documented similar to those in the previously published clinical volumes (edited by Sir Zachary Cope under MacNalty's general editorship), it is nevertheless authoritative and readable. The illustrations and maps are well chosen, and there are appendixes inserted at the end of several chapters. It is a "must" for military medical libraries, particularly those concerned with aviation medicine.—*MAE M. LINK, Ph. D.*

PATHOLOGIC PHYSIOLOGY, Mechanisms of Disease, edited by *William A. Sodeman*, M. D., F. A. C. P. 2d edition. 963 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1956. Price $13.

It is a tribute to American medicine that the first edition of Dr. Sodeman's *Pathologic Physiology* had such a popular reception that a second edition was required. This book correlates basic physiology and pathology with clinical medicine, and those who employ references such as this in their practices must *pari passu* become more astute and capable physicians.

In compiling this book, the editor has enlisted an "all-American" cast of 29 outstanding clinicians and teachers. Each is a recognized authority in his specialty, and all have published extensively in medical journals or texts.

All systems are covered thoroughly in a manner designed to clarify and teach the reader the physiology of body systems and the variations caused by morbid processes. Despite the number of authors the book is well integrated. Illustrations and tables are well placed and add measurably to the instructional value of the reading context. There is an excellent bibliography appended to each chapter.

Besides an up-to-date revision of the chapters presented in the first edition, Dr. Sodeman has added three new chapters on subjects not covered in the first edition.

This book should be of particular value to general practitioners, internists, and surgeons, and will serve as an excellent reference for those medical officers stationed aboard ship and on overseas assignments. This book can be used as a self-teaching source for postgraduate study by those unable to take time off for didactic training.

—*JULIAN LOVE, Capt., MC, USN*

THE YEAR BOOK OF THE EYE, EAR, NOSE AND THROAT (1955-1956 Year Book Series). The Eye, edited by *Derrick Vail*, M. D., D. Oph. (Oxon.). The Ear, Nose and Throat, edited by *John R. Lindsay*, M. D. 471 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1956. Price $6.50.

This yearbook is divided into two sections; the first, edited by Dr. Derrick Vail, consists of 235 pages devoted to ophthalmology. The second section, edited by Dr. John R. Lindsay, consists of 94 pages devoted to otology and 118 pages devoted to rhinolaryngology and allergy. The abstracts in this book are from both foreign and domestic literature and for the most part are well chosen. The editors are to be commended for their excellent and painstaking work. Editorial comments after many of the controversial articles are both interesting and instructive. The subject index is quite complete for a book of this kind and adds much to the value of the book. The *Year Book* is recommended to all specialists in ophthalmology and otolaryngology who wish a quick review of the literature during the past year.

—*SHIRLEY A. FUHRING, Capt., MC, USN*

CHEST X-RAY DIAGNOSIS, by *Max Ritvo*, M. D. 2d edition, revised. 640 pages; 633 illustrations on 426 engravings and 1 color plate. Lea & Febiger, Philadelphia, Pa., 1956. Price $16.

The appearance of this second edition of *Chest X-ray Diagnosis* a scant four years after publication of the first reflects the rapid evolution of the newer diagnostic criteria and technics of examination applicable to the chest.

This edition follows the format of the first. The purposes are to describe and illustrate the roentgen findings in normal and diseased states of the lungs, the heart, and their coverings and to evaluate their potentialities and limitations in diagnosis. The author has had an extensive experience and is thoroughly qualified for this undertaking. He has carefully correlated roentgen findings with clinical and pathologic aspects. The latter are described briefly but succinctly and concisely. The emphasis is on the roentgenologic viewpoint.

The book catalogs a very comprehensive list of normal and abnormal conditions. The work is divided into eleven sections corresponding to the anatomic divisions of the chest. The text is profusely illustrated. Except for a few small reproductions of conventional chest roentgenograms, which show a significant loss of detail, the illustrations are of excellent quality.

Among the new subjects not covered in the first edition are amyloidosis, tuberous sclerosis, hemorrhagic fever, eosinophilic granuloma, and hyaline disease of the lungs; traumatic torsion of the lung; broncholithiasis; primary tumors of the diaphragm; hibernoma; parathyroid tumors of the mediastinum; and several congenital cardiac lesions. The chapter on congenital diseases of the heart and great vessels is greatly expanded over that in the earlier edition and is especially well written from the standpoint of the roentgenologist.

The author refers favorably to the use of test doses of radiation therapy in the differential diagnosis of mediastinal tumors (page 323) and illustrates one example with a presumed diagnosis on the basis of such a test (page 332). Although not absolutely discredited, the therapeutic irradiation test is not in good favor today, because radiosensitivity is a poor indicator of histologic structure, and accurate microscopic diagnosis can be obtained with relative ease through exploratory thoracotomy without significant mortality or morbidity.

The place of the chest roentgenogram in the practice of medicine is well established, as is the continuing need for suitable reference books concerning its interpretation. Those physicians and students concerned with the examination of the chest will find *Chest X-ray Diagnosis* a rich source of timely information in logically organized form.

—HARRY L. BERMAN, Col., MC, USA

New Books Received

Books received by the *U. S. Armed Forces Medical Journal* are acknowledged in this department. Those of greatest interest will be reviewed in a later issue.

OF WATER, SALT AND LIFE, an atlas of 36 pages illustrating 31 color plates, prepared and distributed by Lakeside Laboratories, Inc., Milwaukee, Wis., 1956.

THE ACCIDENT SYNDROME, The Genesis of Accidental Injury, A Clinical Approach, by *Morris S. Schulzinger,* M. A., M. D. 234 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1956. Price $6.50.

FLUID BALANCE HANDBOOK FOR PRACTITIONERS, by *William D. Snively, Jr.,* M. D., and *Michael J. Sweeney,* M. D. 326 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1956. Price $6.75.

TEXTBOOK OF UROLOGY, by *Victor F. Marshall,* M. D., F. A. C. S. 268 pages; illustrated. Paul B. Hoeber, Inc., Medical Book Dept. of Harper & Bros., New York, N. Y., 1956. Price $5.50.

NEUROLOGICAL AND NEUROSURGICAL NURSING, by *C. G. deGutiérrez-Maboney,* M. D., and *Esta Carini,* R. N., M. A. 2d edition. 565 pages; illustrated. The C. V. Mosby Co., St. Louis, Mo., 1956. Price $6.25.

CHANGING CONCEPTS OF PSYCHOANALYTIC MEDICINE, Proceedings of the Decennial Celebration of the Columbia University Psychoanalytic Clinic, March 19 and 20, 1955, edited by *Sandor Rado,* M. D., D. Pol. Sc., and *George E. Daniels,* M. D. 248 pages. Grune & Stratton, Inc., New York, N. Y., 1956. Price $6.75.

PLASTIC REPAIR OF GENITO-URINARY DEFECTS, by *George Bankoff,* M. D., D. Ch., F. R. C. S. Ed., F. R. F. P. S. 355 pages; illustrated. Philosophical Library, Inc., New York, N. Y., 1956. Price $17.50.

PSYCHOANALYSIS OF BEHAVIOR, Collected Papers, by *Sandor Rado,* M. D., D. P. Sc. 387 pages. Grune & Stratton, Inc., New York, N. Y., 1956. Price $7.75.

SELECTED PAPERS ON PSYCHO-ANALYSIS, Volume I: On the Early Development of Mind, by *Edward Glover,* M. D. 483 pages. International Universities Press, Inc., New York, N. Y., 1956. Price $7.50.

THE PREMARITAL CONSULTATION, A Manual for Physicians, by *Abraham Stone,* M. D., and *Lena Levine,* M. D. 90 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1956. Price $3.

UNITED STATES ARMY IN WORLD WAR II. The Technical Services. The Medical Department: Hospitalization and Evacuation, Zone of Interior, by *Clarence McKittrick Smith.* 503 pages; illustrated. Prepared by the Office of the Chief of Military History, Department of the Army, Washington, D. C., 1956. For sale by the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Price $4.

THE MATHEMATICS OF DOSAGES AND SOLUTIONS FOR NURSES, by *Ira Lunan Ferguson,* M. S. P. H., Ph. D., and *Elizabeth S. Ferguson,* B. A. 191 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., 1956.

CRYPTOCOCCOSIS, Torulosis or European Blastomycosis, by *M. L. Littman,* M. D., Ph. D., and *Lorenz E. Zimmerman,* M. D. 205 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1956. Price $8.50.

SPORTS INJURIES MANUAL FOR TRAINERS AND COACHES, by *Donald F. Featherstone.* Foreword by *R. Salisbury Woods,* M. D., F. R. C. S. 132 pages; illustrated. Philosophical Library, Inc., New York, N. Y., 1956. Price $6.

THE DRUG ADDICT AS A PATIENT, by *Marie Myswander,* M. D. 179 pages. Grune & Stratton, Inc., New York, N. Y., 1956. Price $4.50.

THE TREATMENT OF FRACTURES, by *Lorenz Böhler,* M. D. Volume I, translated from the 13th German edition by *Hans Tretter, Helen B. Luchini, Frank Kreuz, Otto A. Russe,* and *Robert G. B. Bjornson.* 5th edition in English. 1,072 pages; 1,721 illustrations. Grune & Stratton, Inc., New York, N. Y., 1956. Price $24.50.

ESSENTIALS OF PSYCHOLOGY, by *Werner Wolff.* 2d revised and enlarged edition of "What Is Psychology." 385 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1956. Price $6.50.

MUSCLE TESTING, Techniques of Manual Examination, by *Lucille Daniels,* M. A., *Marian Williams,* Ph. D., and *Catherine Worthingham,* Ph. D. 2d edition. 176 pages; illustrated. Format and test illustrations by *Harold Black.* Anatomical drawings by *Lorene Sigal.* W. B. Saunders Co., Philadelphia, Pa., 1956.

SURGERY OF THE HAND, by *Sterling Bunnell,* M. D. 3d edition. 1,079 pages; 1,047 illustrations and 9 color plates. J. B. Lippincott Co., Philadelphia, Pa., 1956. Price $22.50.

ATLAS OF EXFOLIATIVE CYTOLOGY, by *George N. Papanicolaou,* M. D., Ph. D. 230 pages of text; 36 full-page color plates; complete with loose-leaf leather binder, 10½ x 11½ inches in size. Published for the Commonwealth Fund by Harvard University Press, Cambridge, Mass., 1954. Price $18.

Supplement 1 (1956) to ATLAS OF EXFOLIATIVE CYTOLOGY (1954) by *George N. Papanicolaou,* M. D., Ph. D. 50 pages of text; 17 full-page color plates; for insertion in Atlas loose-leaf leather binder. Published for the Commonwealth Fund by Harvard University Press, Cambridge, Mass., 1956. Price $4.

THE YEAR BOOK OF PATHOLOGY AND CLINICAL PATHOLOGY (1955-1956 Year Book Series), edited by *William B. Wartman,* M. D. 480 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1956. Price $6.50.

ANATOMY FOR SURGEONS: Volume 2. The Thorax, Abdomen, and Pelvis, by *W. Henry Hollinshead,* Ph. D. 934 pages; 1,109 illustrations. Paul B. Hoeber, Inc., Medical Book Dept. of Harper & Brothers, New York, N. Y., 1956.

MEDICAL EFFECTS OF THE ATOMIC BOMB IN JAPAN. Edited by *Ashley W. Oughterson,* M. D. and *Shields Warren,* M. D. Foreword by *Lewis L. Strauss,* Chairman, U. S. Atomic Energy Commission. First edition. This book is based on the six-volume report of the Joint Commission for the Investigation of the Effects of the Atomic Bomb in Japan. National Nuclear Energy Series, Manhattan Project Technical Section, Division VIII, Volume 8. 477 pages; illustrated. McGraw-Hill Book Co., Inc., New York, N. Y., 1956. Price $8.

NEUROPHARMACOLOGY, Transactions of the Second Conference, May 25, 26, and 27, 1955, Princeton, N. J., edited by *Harold A. Abramson,* M. D. 328 pages; illustrated. Josiah Macy, Jr. Foundation, New York, N. Y., 1956. Price $4.25.

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